

G. H. Sellars

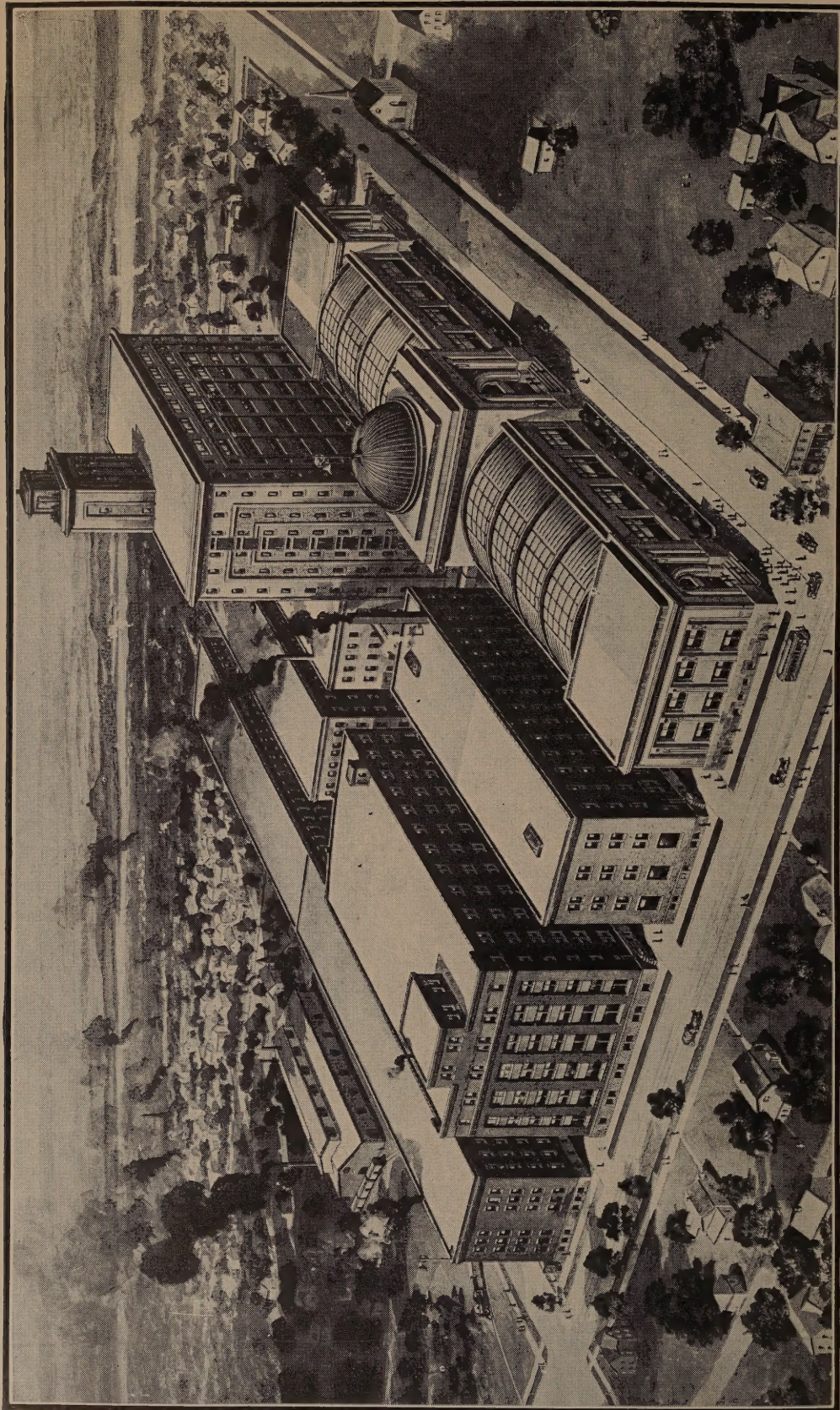
988 S. Liberty St.

Salem, Oregon

WATKINS STOCK RAISERS' MANUAL

JOSEPH F. SCOTT
488 NORTH LIBERTY ST.
SALEM - OREGON
PHONE 1040-1





THE WATKINS PLANT AND ADMINISTRATION BUILDING. THIRD, FOURTH, CHESTNUT AND LIBERTY STREETS.

Plant and Branches contain 15 acres of floor space. Immense Bottle Warehouse just beyond, on Second street, holds 100 car loads of bottles.

WATKINS STOCK RAISERS MANUAL

*Manual for the guidance of
Stockraisers, Breeders & Farmers*



COPYRIGHT 1914

The J.R. WATKINS MEDICAL
COMPANY

WINONA · MINNESOTA

BALTIMORE · BOSTON · MEMPHIS
SAN FRANCISCO · WINNIPEG

INTRODUCTION

This book is prepared expressly for and dedicated to the stockraisers of America. Its purpose is to give reliable information about the different domestic animals, their care, breeding, their diseases and their treatments.

Stock raising in its various branches is one of our greatest industries and the source of vast wealth. Better live stock better cared for means increased prosperity for farmers, breeders and feeders and better times for us all.

In Watkins Almanac for 1914 we announced our intention to maintain a service and information bureau. It is some trouble to write and it takes time to get a reply, so in offering our services we thought best to prepare and publish and distribute this handbook for ready reference, and we trust it will be valued and used by the millions who will receive it. It will help you solve most of your live stock problems and its advice will be safe for you to follow. However, we invite you to write us in detail regarding veterinary treatments or the use of any remedies made by The J. R. Watkins Medical Company. A blank for this purpose is provided in the back of this book.

Ask the Watkins salesman about his liberal terms of furnishing you a full line of guaranteed veterinary remedies.

J. R. WATKINS MEDICAL CO.,
Winona, Minn., U. S. A.



Clydesdale Mares and Colts.

THE HORSE BREEDING INDUSTRY OF THE COUNTRY.

THE all absorbing question before every stock raiser today is, to what extent will the motor truck replace the horse? During the past ten years, wonderful strides have been made in this great country of ours. You can remember that at one time any team would do to scratch the ground over, but the present day heavy machinery requires a heavy draught type of horse weighing from 1300 to 1600 pounds. As previously stated, formerly any kind of team would do, and the farmer, having been caught once with a barnful of horses which he was unable to sell, has declined to raise any more horses than were required for his own use.

The farmer has not raised horses since 1900 with any view of having a surplus to sell on the market. His object has been to raise enough horses to do his own farming with and if there was a team or so extra, a few more than he needed, he could easily dispose of them to the shipper.

The farmer of today, however, is not quite certain regarding the future of the horse, or what is to become of him; whether the horse will come to be regarded as a matter of curiosity and be put in a zoological garden or museums as we now find the moose and the buffalo.

We venture to say that none of us living in the present age are going to see the horse supplanted, although there is general fear that the automobile truck will replace the horse. It has only been a short time ago when the best draught horse in the country could be bought for one hundred dollars but that is not the case today, for the slogan of the past ten years among the best breeders has been, distinct types of the purest blood, with the result that we have today better standard breeds of horses than have ever been produced in this country and this in a measure accounts for the present healthy condition of the horse industry. Well informed breeders have ceased trying to produce a draught horse by breeding a percheron stallion to a mustang mare, or a light harness horse by breeding a coach stallion to a shire mare.

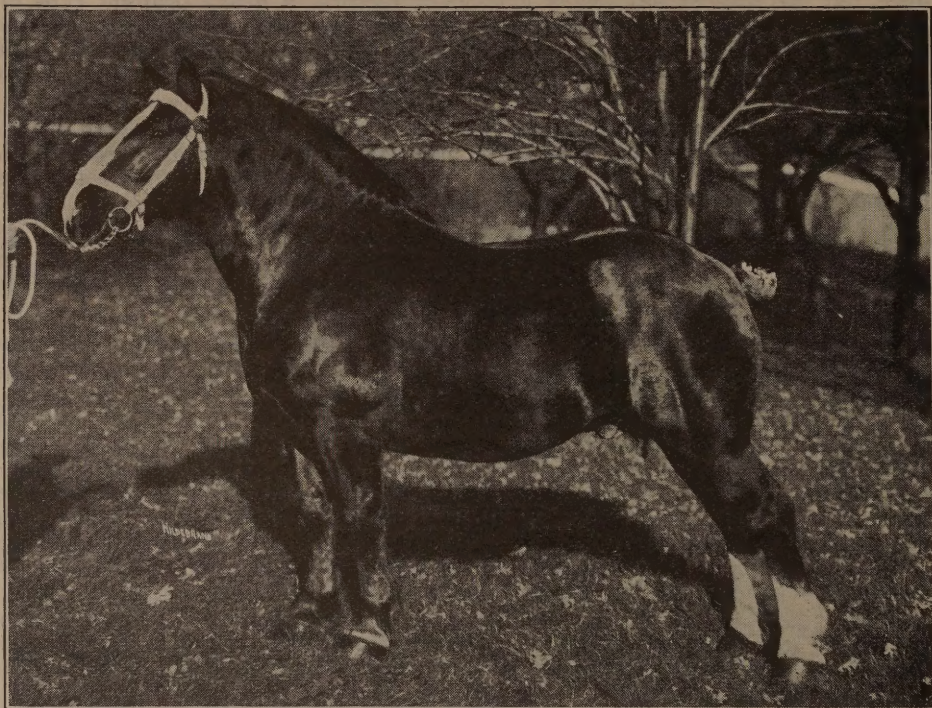
Present statistics show a marked decrease in the production of cattle, sheep and swine in relation to the increase of population; while the very best breeds of horses are barely meeting the demand. The valuation of the farm horses, as established by the United States census, is about one hundred and ten dollars per head, which is the highest value horse stock has ever reached in this country.

THE MOTOR TRUCK AND THE HORSE.

NOW, how about this motor truck and to what extent is it going to supplant the horse? It is true that the motor truck has supplanted the horse to a certain extent and 'twould be foolish to deny this fact. We are able to mention just one purpose in which the motor truck is entirely superior to the horse and that is in hauling large loads at high speed on long distance runs on paved streets or macadamized roads.

The horse is available for all kinds of work whether it be for light driving or heavy trucking. At the present time there is no type or capacity of truck which is entirely suitable for all kinds of work. In other words the auto makers are specifying that their trucks are made for 1000 pounds and upwards. It has been found by those who have given the motor truck situation careful tests that the above statement is true and the larger business houses still find use for the horse by using lighter trucks or horse-drawn vehicles for the distribution of the smaller deliveries. In this respect the horse drawn vehicles prove to be the cheaper proposition.

For making the numerous stops in the delivery of small packages, no one can deny that the starting and stopping of a motor or even the constant shifting of gears necessary for stopping and starting are bound to wear out the machinery whether it be an auto truck or a steam engine. At the present time there are no motor truck manufacturers that are willing to state how long the life or usefulness of their machine will be. The experience of those who have used both the pleasure automobile and commercial trucks find that three years is about the limitation or life of the truck and during this time it is necessary to make constant repairs which are expensive in order to keep the machinery in good working order. It seems almost unnecessary to say that a well matured horse will give more than three years service under the most trying conditions and at the end of that time will be just as valuable to the owner for probably another three years work.



Mons Gros, Grand Champion Belgian Stallion, 1912 International.



Model Horse Stables.

Now granting that the life of a truck is only three years or even say four, it is then necessary to purchase a new one and every one knows the value of second hand machinery whether it be an auto truck or a binder. It has no real value. It is admitted by the commercial motor truck manufacturer that, ton for ton, it will cost twice as much to handle it with a motor truck as it does with a horse-drawn vehicle. In order to bring the cost of transportation down it is necessary that the truck travel twice as fast and twice as far as a horse-drawn vehicle.

Granting that the motor truck can do twice the amount of service under the best conditions, viz; well, paved and level streets it has not proven to be a competitor of the horse-drawn vehicle over poorly macadamized roads and is seriously handicapped over sandy or muddy roads. We are advocates of the good road system in this country and hope the day is not far distant when a large percentage or at least the main thoroughfares of the country will be macadamized for everyone who has lived in the country realizes that it requires a span of good horses to draw even a light buggy when conditions are not favorable and we will not venture to predict what would happen to the average business man or farmer who would supplant the horse for a motor truck for all year service over the average American road. The day may come when all roads will be macadamized and the motor truck reach a higher state of perfection than it has at the present time and that the very life of the industry will not be menaced for a fuel supply as it is at the present time. The question then for the horse breeder is this—how soon will all the roads be macadamized and an inexhaustible supply of fuel for internal combustion engines be realized as these facts must become realities before the horse can be supplanted. That the internal combustion engine has come and can be applied in many useful ways no one can deny, but that it will supplant the horse entirely upon the city street or upon the farm is only in the mind of a dreamer.

The best friend that the truck manufacturer has today is the horse, for a span of good horses or mules, wagon and harness come as high as the price of a ton truck.

The real question for the horse breeder to consider is the best types of

horses to raise. The time was when the street car service used up horses by the thousands annually and they were not particular regarding the type so long as it was a good serviceable, general purpose animal. It is this point that the average breeder has overlooked in the past, and the so-called general purpose horse has and will be a future menace to the horse industry, unless carefully developed, of this country.

There is no specific definition for a general purpose horse that can be compared to other animals. For example, if one hundred average stock raisers were called upon to define milk, beef, and dual purpose cattle, the answer would practically be along the same lines but if these same people were asked to define a general purpose horse there would be a diversity of opinions and answers. We are all familiar with the famous trotting and draught types, but there has never been enough effort concentrated on developing an ideal general purpose animal, and we believe that it is upon the development of the general purpose horse that the future of the horse industry rests largely.

We are not going to describe an ideal type of general purpose horse minutely, but only in a general way.

A general purpose horse should be of good size weighing from 1100 to 1300 pounds and standing $15\frac{1}{2}$ to 16 hands. They should be toppey, well blooded in appearance, of good conformation and substance and attractive especially in action.

The head should be fine and lean, the neck long, arched and lofty, the shoulders long and oblique, the body deep and close ribbed, the back strong and short, the croup level and strong in the coupling, the quarters well muscled and deep,



Imprecation, Grand Champion Percheron Stallion at 1912 International.



Type of Heavy Mules.

the legs straight, with large well-knit joints and wide cannons and shanks, pastern long and slanting, feet tough and well made.

A horse that is characterized by a smooth, well-turned conformation, a strong, attractive action, endurance for long drives at good speed, good manners and intelligence, and adaptability for light or heavy harness work, will be the greatest competitor of the motor truck for the motor truck manufacturers will admit that they cannot combine good manners, intelligence and adaptability for light and heavy work in one machine.

The general purpose type can be produced from the material mentioned above by the careful blending of the running, trotting, light and heavy coach types.

And once again we want to impress upon you that we believe it is upon the development of the ideal general purpose animal that the future of the horse industry rests largely. By this statement we do not mean to discourage the heavy draught type breeders for the demand for the best types of draught horses is greater than the supply.

The horse industry can be summed up in this manner—breed true to a certain type, study the market conditions carefully and eliminate the undesirable type and when the time arrives that the breeds will be as distinct as the present types of milk, beef and dual purpose cattle, the horse will be on a firmer basis than ever before in this country.

THE MULE BREEDING INDUSTRY.

THE mule breeding industry does not differ from the horse breeding industry, the question of selection and size will have to be considered more carefully in the future, for what we have said regarding distinct types holds good in breeding mules.

Every breeder of mules must take into consideration the future as to whether the large or small type of mule will be the most profitable. There has never been a time in the past when a span of large mules did not bring more in comparison than a span of horses.

The small mule has always been in demand for the Southern trade and for pack mules in the different armies throughout the world. In forecasting the future of the different types of mules, the larger type would have the preference, from the fact that as a general purpose animal, it will not compare with a good general purpose horse.

For the past one hundred years the mule has reigned supreme in transporting army supplies, and in some recent tests with auto trucks the mule has more than held his own. Armies do not operate along paved streets in time of war and more often than otherwise they operate where there are no roads or over roads that are muddy and swampy. If a transport wagon gets stuck in the mud it is simply a case of more mules to pull it out and when a truck is stuck in the mud it will need the aid of some tractive power of the mule or horse type to pull it out.

The future of the horse and mule breeding industry is on a firmer basis today than ever before, if the breeder will only consider the breeding of types more carefully. The U. S. Department of Agriculture is inviting all breeders to join in the production of the ideal general purpose horse, for at the present time there is a visible shortage of cavalry horses for army purposes.

Our foreword then in the breeding industry would be the production of an ideal type of general purpose horse and the best types of heavy draught horses and mules. Profit by the past, and eliminate all intermediate types for they have been the menace to this industry. If you are a breeder of the heavy draught horse, improve the type. If you are a breeder of heavy mules improve the type and if you are developing the general purpose type of horse, get all the information possible on the subject and make the best type possible.

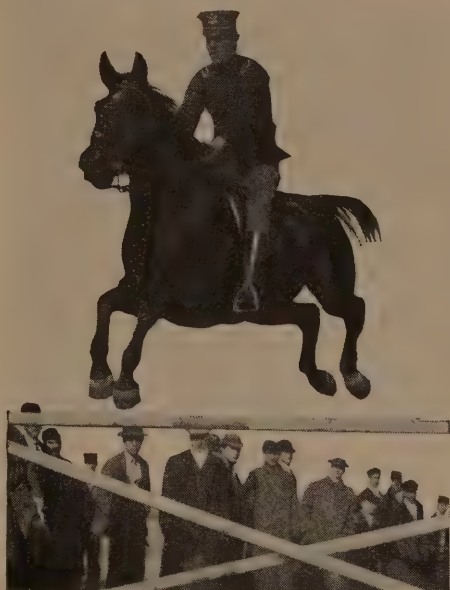
There are points that must be considered on common ground by breeders of different types in order that no one type will be developed faster than the demand. In other words place the breeding industry on the same basis as the cattle industry where the distinct types are well defined to meet the demands.

GENERAL LAWS OF BREEDING.

TO be in a position to carry out his work economically and intelligently the breeder should further have a working knowledge of the laws of heredity. It no longer suffices to assume, as was done by breeders a generation ago, that on the average each parent contributes one-half, each grandparent one quarter, and so on, of the total heritage. He must know about Galton's law of ancestral inheritance, about Gregor Mendel and his followers, and realize what is implied by the conclusions arrived at as to the continuity of the germ plasm that makes a new life.



Good Type General Purpose Horse—The Army Remount or Cavalry Type.



Army Officer at the International.

Without going into the principles of animal breeding further as a science, we will consider horse breeding as practiced and practicable, alluding to some of the well-known laws and rules as they suggest themselves, when having a bearing upon the particular problems under consideration. Probably the first question that concerns the horse breeder is the kind of mares to breed from and this certainly should receive more careful thought than it usually does.

The fundamental law of breeding, "like begets like" applies to the brood mare with the same force that obtains with other animals, and if it is true, as it certainly is, that it does not pay to produce inferior horses, then surely it does not pay to breed poor mares, knowing that their inferiority will be reproduced.

In the first place, the mare must be the best of her kind. She must be free from defects of size and conformation that may be transmitted to her progeny. She must be free from unsoundness of an hereditary nature, also temperament and intelligence are subject to this same law. Broken down and unsound mares are not desirable for breeding purposes. The desirability of a brood mare is not affected by age; in fact, an old mare if sound and of the right type, presents advantages by way of guarantee of stamina and longevity.

According to Galton—The two parents between them contribute on an average one-half of each inherited faculty, each of them contributing one-fourth of it. The four grand-parents contribute between them one-fourth, or each of them one-sixteenth, and so on. The sum of the series one-half, one-fourth, one-eighth and one sixteenth being equal to one as it should be.

It need hardly be stated that the prepotencies or subprepotencies of particular ancestors in any given pedigree are eliminated by a law that deals with average contributions, and that the varying prepotencies of sex in respect to different qualities are also eliminated. According to this law of average, contributions made by parents, grand-parents, etc., are definite and diminish in a precise ratio according to the remoteness of the ancestors. Galton does not mean that his law will apply to individual cases and the breeder should bear in mind these contributions are true in a considerable number of cases in each generation.



Lockinge Hengist, Grand Champion
Sire Stallion, 1912 International,
Weight 2350 Pounds.

Of course there are certain difficulties and even added risks in breeding old mares. Their fecundity is lessened and difficulties of parturition are somewhat increased by old age.

In view of the fact that breeders generally must select from among animals considerably short of perfection, and we advise discrimination against the defects mentioned, it may well be asked "What mares then can we breed?" Probably the defects of lack of refinement, a rather open conformation bordering on coarseness, and other characteristics peculiar to the female sex are the least objectionable and most easily counteracted by care in selection of the sire. If the mare has strength, good constitutional vigor, is of good size, and free from constitutional defects or unsoundness, she will do to breed.

A matter of great importance and frequently not well considered is the selection of the sire. It is chiefly through the sire that improvement in our domestic animals is secured. First, we should select a stallion that is better than the mares bred to him and of pure blood. He should be in the first place of the breed best suited to the conditions of the breeder's business and market, and of a breed and type that will cross well with the mares chosen. He should not be of an entirely different class from his mares, or uncertainty and much variety of progeny will result. In size he should usually be larger than the mare, for improvement in size is by no means the least object in breeding. Remember that a good big horse is better than a good little horse. The draught sire should weigh a ton and the general purpose sire 1300 to 1600 pounds so that he may add something to the size of his colts as well as to their other points of excellence.

It is necessary that the stallion be more compactly and strongly made than the mare, not alone as sex characteristics but that he may beget rugged, strong foals. He should be finely finished, upstanding, stylish, and superior in action, for all these characters are valuable and need to be improved in breeding. His temper, courage and intelligence are also important.

This is an individual characteristic that cannot be determined except by test; but the sire that has the prepotency to stamp his virtues uniformly upon his progeny is an animal of rare value. Pedigree is valuable chiefly as an indicator of prepotency, for the pure-bred sire is usually more prepotent because of his lineage. The kind of a pedigree that is most certain to produce prepotent animals is the one that is the most uniform, not only in the kind of characteristics of the animals included, but in their degrees as well.

In regard to the season of the year, spring is the natural breeding season, and the natural instincts of the mares to breed in spring and summer are very firmly fixed. It often happens that the mare can be spared from work at other times more easily, and when this is the case the greatest advantages will warrant an effort in that direction. Many mares may be successfully bred to foal in late summer or early fall or in late winter or very early spring so that their use on farms for spring and summer work is not seriously interfered with.



Champion Shire and Belgian Fed on Watkins Stock Tonic.



Polled Durhams—The General Purpose Type.

CATTLE.

The name cattle comes from the Latin word "Capitale" meaning wealth or property, a word that was applied to the ancient feudal system to moveable property and particularly to live stock, and surviving in a wider meaning at present time as "Chattel or Cattle," a general term for cows, oxen and other domestic animals of agricultural use.

Cattle appear to have been among the earliest of domesticated animals, and were undoubtedly among the most important agents in the growth of early civilization. They are mentioned in the oldest written records of the Hebrew and Hindu people, and are figured on Egyptian monuments raised over 3000 years B. C. In infant communities a man's wealth was measured by the number and size of his herds—Abraham, it is said, was rich in cattle—and oxen for a long period formed, as they still do among many savage and semi-savage tribes, the favorite medium of exchange between individuals and communities.

The Hindus were not allowed to shed the blood of the ox and Egyptians could only do so in sacrificing to their gods. To destroy them wantonly was a crime among the Romans, punishable by exile.

The Jews and Hindus were forbidden to muzzle cattle when treading out grain at threshing time.

From this early history and heritage, there has been handed down to us, many valuable breeds of cattle, which may be divided into three general classes; dairy, beef, and dual purpose animals. From a breeders standpoint, many types of dairy and beef cattle can be considered perfect, and wonderful strides are being made in perfecting the dual purpose cow.

The dairy cow of today stands out as the greatest achievement in breeding, from the fact that in nature she was only called upon to furnish nourishment after the birth of her offspring for several months or until such time as they can subsist without her aid. Mankind, however demanded more of this patient animal, and today she contributes more to their comfort than any other domestic animal.

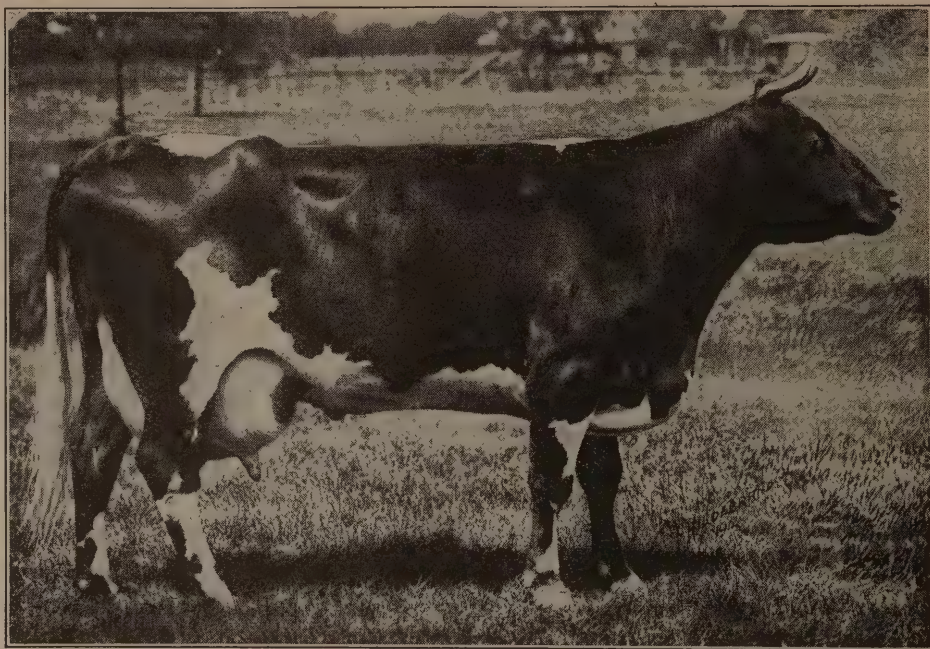
Not only is dairying the leading animal industry of this country, but will continue to be indefinitely, for the reason that the cow is the most economical producer of food for human beings. Foremost to be considered is the milk production, as milk contains all the nutriment required to a growing body, in proper proportions, in a palatable and easily digestible form, and constitutes a food relished by all people from childhood to old age. From milk also is produced two other universal food products—butter and cheese. In the slaughtered animals we have beef, the meat food, while from the hide to the hoof, this animal contributes more to the welfare of man than any other animal.

What is the modern dairy cow, or the so-called milk producing machine, that must produce enormous amounts of milk annually to meet the ever increasing demand? She is a highly complex scientific bred animal, from a breeders standpoint, and from the scientific feeder's standpoint, an animal that consumes large amounts of rations that are scientifically proportioned, checked by the Babcock test, to see if she is maintaining the maximum yearly output of milk or butter fat now demanded of daily herds, and if she does not meet these requirements, to be replaced with one that will.

There is no doubt that the above answer is correct as far as it goes, and represents the best efforts of the men who have given their time to breeding and feeding, but many stock raisers and dairymen who follow along these lines meet with discouraging results. The breeder does not lay enough stress upon the fact, that in order to produce the higher types of dairy animals, a more delicate nervous system must be developed. The authorities who combine the rich food rations for more milk production, also fail to impress upon you the necessity of tonic to assist the nervous and digestive systems to do more work than nature intended them to do. There are many valuable dairy animals sent to the butcher's block each year, that would make good returns, if given a good reliable stock tonic. We do not censure the scientific breeder and feeder, for they have performed a service that cannot be computed in figures.

It would be impossible to compute the losses to the dairy industry, in apparently healthy cows, that fail to produce the milk or butter fat yearly that is expected of them, due to slight nervous disorders or failure on the part of the digestive systems to properly assimilate the rations, but we venture to say that this alone will amount to thousands of dollars to the dairy industry, annually.

We are consulting the scientist more today than ever before in solving all problems and for over forty years the Watkins Medical Company have scientifically contributed their best efforts to the stock industry of this country. Our Stock Tonic is the best that science and money can produce. The ingredients are published in every package put out by the J. R. Watkins Medical Company in order that the stock raiser may know exactly what he is using.



Shorthorn Dairy Cow—The Dual Purpose Type.



Grand Champion Shorthorn Bull, 1912 International.

CATTLE BREEDING AS AN INDUSTRY.

THE breeding of cattle has been developed and perfected with a certain object in view. That is, breeders have, by careful selection, and mating made cattle that are adapted for definite purposes. In the milk types we have the well known breeds of Jersey, Guernsey, Holstein and Ayrshire. It is hardly necessary to enter into any discussion regarding the relative merits of these particular breeds or to offer any suggestions on the dairy problem as a whole for this is a highly specialized industry at the present time on which many volumes of good literature are available to every one interested in this subject.

There is another class known as the dual purpose class in which the Shorthorn, Brown Swiss, Polled Durhams, and Red Polls predominate. A third class which is known as the beef type, consists of the Hereford, Aberdeen Angus, Galloway and Devons. During the past twenty years the dairy cow has remained about stationary, during the same period the beef and dual purpose types have decreased over twenty-seven per cent..

THE SHORTAGE OF BEEF PRODUCING ANIMALS.

THE shortage of beef cattle and beef supply is causing much concern in this country at the present time. During the past few years the price of beef has risen higher in stock centers than ever before in the history of the country. Owing to the changes and rapid development of this country we can hardly keep abreast of the times. As late as 1900 large herds of beef cattle could be found on the free range and this meant cheap beef. We now find that conditions have changed. Large ranges have been cut up into small tracts and to a certain extent been taken over by the sheep industry and the small farmer. This condition has also brought about an uncertainty of an available supply of cattle for feeding purposes.

In addition there has been a great increase in the price of corn and other cereals, which has made cattle feeding somewhat of a risky proposition for a considerable time, owing to the returns made from the standpoint of the feeder.

At the present time there is not enough of the beef type cattle to meet the needs of the ever increasing population of this country.

According to the census we have 29,000,000 more people to feed than we had twenty years ago. Americans are great meat eaters. In a recent estimate made by the United States Department of Agriculture, it is shown that the annual consumption of meat per head of the population to be 162 pounds, of which beef constitutes 80 pounds and veal $7\frac{1}{2}$ pounds.

This is about 25 pounds per head greater than the British consumption of beef and veal and approximately 40 pounds greater than that of France and Germany.

It is a simple business proposition that when the home market demands practically our entire output, at prices equal to or better than the foreign, there will be little or no exporting.

The time is at hand when we must conserve our meat supply and take steps to increase it, and at the present remunerative prices for food animals it is probable that this will be gradually accomplished by the further perfecting of the milk and beef type or the so-called dual purpose animal.

It is inevitable then with the passing of the open range, that an animal must be more than a beef type to be profitable on the average farm and still meet the present demand for more beef and dairy products, based on the fact that there is no visible increase in the number of dairy cattle and a decided shortage in the beef types.

The dual purpose animal has been severely criticised in the past but we do not believe that the perfection of the Shorthorn, Brown Swiss, Red Polls, Polled Durhams, etc., have been in vain, and they will come into their own by making up the present deficiencies.

In fact, more than seventy-five per cent of the butter produced in creameries in the central west is derived from milk of the dual purpose cow, chiefly Shorthorns. There have been great strides made along this line in the past ten years and it would seem logical to bend every effort to further perfect the dual purpose animal to meet the present day exigencies.

Farmers generally, and especially those in the corn belt, should take ad-



Model Dairy Barn and Herd of Jerseys.



Champion Brown Swiss Cow, 1912 International—Dual Purpose Type.

vantage of the situation and develop such types under the present favorable conditions.

The South has great possibilities for the future in this respect. The mild climate, the long grazing season, and the cheap land in that section make it highly suitable for the purpose of beef production.

There is just one more thought of interest that should be presented before leaving this subject and that is the developing of the dairy heifer. It will be found much cheaper and more certain for the average dairyman to raise his own cows than to pay someone a profit to raise them for him. Men who have good cows are not anxious to part with them and the dairyman who depends upon the purchase of mature cows to keep up his herd is forced to pay someone a good profit for raising them or be content with the culls of other herds and even when he pays a high price he is not certain that the cows he buys will prove profitable in the end.

In connection with the development of cattle to meet the shortage of beef and the ever increasing demand for dairy products, do not overlook the importance of organizing local cow-testing associations, bull associations, breeder's and live stock associations, herd records, etc.

The forming of associations, such as have been mentioned, and the accurate keeping of herd records bring about the selection of better breeding animals based on records of performance and rapid and sure development of profitable strains of either type is made possible. The community in turn becomes a breeding center for one particular breed of cattle and this has a tendency to develop a unity of interests.

We cannot leave the subject of cattle without a word on tuberculosis for this is the great menace of the cattle industry and in dealing with the nature of this disease we should not lose sight of the fact that it is widespread affecting animals and also men.



JACOBA IRENE, NO. 146443.

1,126 Pounds Butter in a Year.

This cow produced in one year 17,253 pounds (or nearly nine tons) of milk, and 1,126 pounds 6 ounces, 83 per cent fat, of butter. This is an official record, made by a representative of the Dairy Department of the University of Illinois. Only one other Jersey cow has a higher record for one year, but, taking Jacoba Irene's average production for four years she stands absolutely without an equal.

Human beings and cattle are its chief victims, but there is no kind of animal that will not take it. Hogs and chickens are quite often affected with it; horses, sheep, and goats but seldom.

Every stock raiser should realize how easily this disease spreads, for sooner or later the tuberculous cow begins to give off the germs of the disease. The germs escape by the mouth and nose, the bowels, in the milk, and the discharges from the genital organs. When the germs are given off in any of these ways, the disease is known as open tuberculosis.

Germs discharged from the mouth and nose are coughed up from the lungs and sprayed over the food in front of the cow or are carried in the air for a time until they fall to the ground. Cows in adjoining stalls may take in these germs in the air they breathe or in the food they eat and so contract the disease.

Germs discharged from the bowels are mixed with the manure and may infect cattle and hogs that are allowed to pick over the dung heap. The practice of having hogs and cattle together in the same yard is sure to result in the infection of the hogs if any of the cattle are affected. The germs in the manure come from matter that is coughed up and swallowed, and in some cases from tuberculosis in the bowels themselves. Manure containing tubercular germs



Champion Red Polled Herd, 1912 International.



Grand Champion Holstein-Friesian Cow at the National Dairy Show at Chicago in 1911.

may easily infect the milk. Particles of dry manure may fall into the milk pail from the skin of a dirty cow or be accidentally flicked off from the tail and fall into the milk. Straining the milk afterwards only removes the larger particles. The smaller ones, including the germs, remain in the milk.

When the udder is tubercular the milk contains the germs in vast numbers. Such milk may look and taste perfectly good, but readily transmits the disease to young animals. It is very dangerous to children. Hogs and calves are readily infected by it.

The loss from tuberculosis in animals alone amounts to millions of dollars annually for no one can deny that where animals are suffering from any disease they will not make the same gain as those in perfect health. There is still another side to be considered by the dairyman in connection with tuberculosis; that is the marketing of of absolutely pure milk from non-infected herds. We believe it is to the interest of every dairyman to prepare to meet the demands being made through legislation, health boards, civic leagues, etc., for this kind of a product.





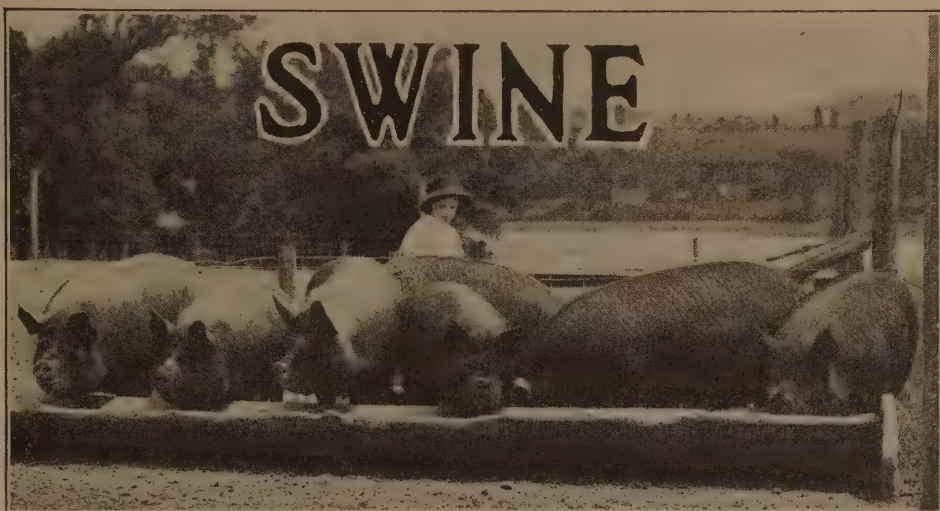
Guernsey Cow—Spotwood Daisy Pearl—Record 18763-2 Pounds Milk, 1102.02 Pounds Butter—Highest Yearly Record for Aged Cow December, 1911.

For an exhaustive treatise on the subject of tuberculosis we refer you to the Farmers' Bulletin 473 in which you will find a plain statement of the facts and illustrations prepared for farmers and others interested in live stock.

Write your congressman or the Secretary of Agriculture for this valuable bulletin.



**ABERDEEN ANGUS—A Leading Beef Type.
Victor, Grand Champion Steer at the 1911 International.**



Berkshire—Excellent Meat Type.

THERE is probably no industry that brings quicker returns on the investment than the Hog Raising Industry. The slogan among the best breeders and raisers is **two crops of pigs from every sow annually**. And during the past five years there has been a handsome profit in raising hogs, as the market has been higher than any time since the Civil War.

No animal will respond more quickly to the right kind of treatment and the right kind of feed. A large majority of hog raisers, however, do not study the market requirements, or the proper handling of hogs for the best profits. Here again the question of distinct types comes into play and no breeder should overlook the fact that it is types that count in this day and age, and not the individual ideas regarding the merits of certain breeds.

In other words there can be no compromise between the bacon types and the heavier lard hog and the breeder should study this matter carefully in the selection of the type for a foundation of a herd.

We are not going to enter into the relative merits of the different types, of the more popular breeds of Poland-China, Berkshire, Chester White, Duroc-Jersey, Yorkshire, Tamworth, Essex, Victorias, Cheshire and Suffock. From the above breeds there can be selected lard and bacon types. The bacon type is gaining in favor and should have the first consideration in the selection.



Poland China Sows.



Yorkshire Sows and Pigs—Bacon Type.

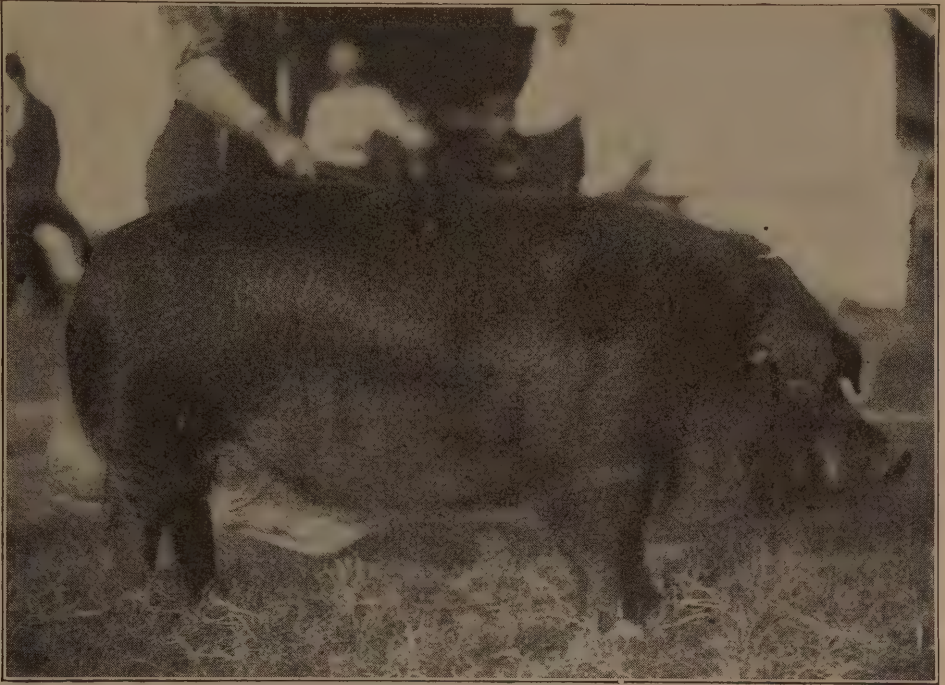
THE FOUNDATION OR IMPROVEMENT OF HERDS.

THE first selection of breeding stock is the keynote of success, whether it be hogs or other animals. The effects of mismating are always difficult to breed out of a herd, and the effect on the beginner is such that a mistake may completely discourage him. It is good economy to make haste slowly in starting or building up a herd. The start should be made with a few animals; in starting different types of hogs, five to eight sows are sufficient. The sows selected should be nearly the same age, which should be about twelve months, and all should be safe in pig, preferably to the same boar. Then by the time the sows have been watched and studied for a season and have raised a litter of pigs the owner will be much better prepared to select a suitable male and have the further advantages of getting one that he can use on both dams and offspring.

While hogs do not show the strong differences of sex that we find in cattle and horses, sex characteristics always constitute a marked feature of a good brood sow. The smoother forehead and lighter, finer neck are points of distinction from the signs of masculinity in a boar. The forehead should be broad between the eyes, the throat clean and trim, the neck moderately thin, and the shoulders smooth and deep; the back should be fairly wide and straight, and ample room for the vital organs should be provided by a good width and depth of chest, well-sprung ribs, and straight, deep sides; in other words, a



Hampshires that Won the Silver Cup at Spokane, Wash., owned by J. M. Truitts, St. Joseph, Oregon, who fed them Watkins Stock Tonic.



Duroc Jersey Boar.

deep capacious body from end to end. Pinched chests and waists must be avoided.

It is generally advised that sows with much length of body should be selected for breeding purposes, length of body being regarded by some as an indication of fecundity. It will certainly do no harm to select sows that are especially long but care should be taken that quality goes with the increase in length. The loose-jointed, long-coupled, slow-maturing, and slow-fattening type should not be allowed to get a foothold in the herd. The influence of length of body on a sow's fecundity is by no means positively known. Many very short-bodied sows have proven to be wonderfully prolific breeders. The surest means by which to select prolific sows is to keep an accurate record of the herd and cull out the sows that do not yield a certain percentage of pigs annually.

Each sow should have at least twelve well-developed teats, thus providing for the proper nourishment of large litters.



Grand Champion Pen of Fat Barrows 1911 International.



Champion Chester White Boar.

SELECTING THE BOAR.

THE importance of the males in the herd should not be asserted at the expense of the females, yet the importance of a male of marked excellence must not be minimized. The boar in general terms represents fifty per cent of the reproductive power of the herd concentrated in one animal; the sows represent an equal amount of reproductive force, divided up among ten to fifty individuals. If, then, these females do not conform strictly to the same type, they are merely convenient machines for the birth and rearing of the young—not what they might be, an influential force in furthering the plans of the breeder and raising the standard of the herd. A superior boar may be used on a herd of inferior sows with good results, but the use of an inferior boar on sows of high quality will have a disastrous outcome. The one method raises the standard of the herd, the other inevitably lowers it.

A boar with the male characteristics strongly developed should be selected, preferably as a yearling, and of the same blood type. He should have a strongly masculine head and a well-crested neck. His shoulders should be developed according to age, but the shoulder development in pigs under a year or eighteen months is objectionable. The same indications of a good bacon or lard producing carcass that the sows require should be seen in the boar. The boar should also be selected to correct any defects that may be common to the sows; for example, if the sows are rather coarse in bone and loosely built, the boar should have high quality—fine bone, skin and hair. If the sows tend toward over-refinement and delicacy, the boar should be rather “rangy” and strong-boned.



Tamworth Boar—Bacon Type



Model Farrowing Pens.

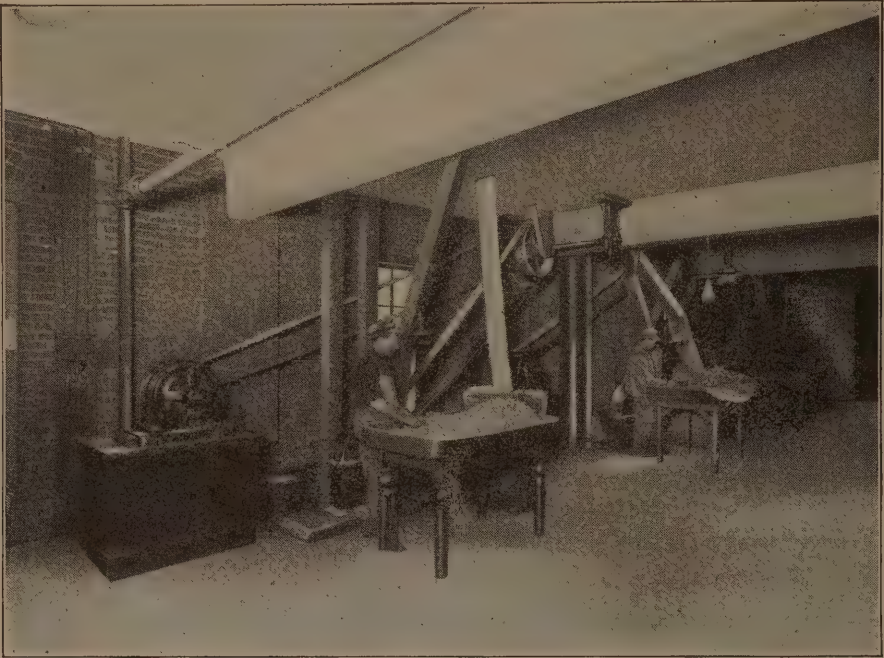
The boar should stand up on his toes. There should not be the slightest indication of weakness in the pasterns of a young one; in a mature boar that has seen hard service it may be expected that he will be a little down on his pasterns but a six to ten months old pig that does not carry himself on upright pasterns is not a safe animal to select for a herd boar; the hind pastern will be in much danger of breaking down with a little age and service. The hock should be carefully set and straight. A crooked hock is as great a drawback as a weak pastern.

PREVENTION OF DISEASE.

THE greatest menace to the hog industry, which breeders in this country have to contend against, is found in the losses which may be experienced through outbreaks of hog cholera, through the contraction of tuberculosis, or through the infestation of the animals, especially young pigs, by parasites. There are some important facts which the breeder must remember, if he is to avoid losses, by reason of the presence of hog cholera or swine plague in the herd. The first is that they are specific germ diseases disseminated by bacteria, and the contagion cannot be spread from one animal to another or from one herd to another except through the agency of these minute organisms. They may be carried in a multitude of ways—by the hogs themselves, on the clothing of persons, on vehicles, in feed, by birds, dogs or other animals, or by streams.

The breeding or feeding of a hog cannot cause either disease, although bad methods may so weaken the constitution and vitality that the animal becomes more susceptible to them than would otherwise be the case. A second fact to be borne in mind is that diseases caused by bacteria may best be prevented or controlled by thorough disinfection and scrupulous cleanliness. Read what we have to say under section five regarding the application of Watkins Germicide Dip and Disinfectant.

Tuberculosis is rapidly increasing among hogs in this country, and is closely



Mills Used in Grinding Roots and Herbs for Watkins Stock and Poultry Tonic.

associated with the same disease in cattle; the reason being apparent when one considers the close relations of these two species of animals upon nearly every farm. Tubercular cattle may scatter great numbers of tubercule bacilli with their excrement; cows that are tuberculous may produce milk that is contaminated with the germs, or carcasses of cattle that have died from tuberculosis may be fed to the hogs; and any of these conditions make the infection with tuberculosis of the hogs concerned a very easy matter.

The feeding of hogs upon creamery refuse is also a very frequent source of infection. In this way the milk of a single cow with a tubercular udder, if sent to a public creamery, spreads the infection to a large number of hogs and may also infect many farms that have never been contaminated with tuberculosis before.



Model Farm Barn and Hog Houses—Courtesy Universal Portland Cement Co.



FROM the very earliest ages, sheep-raising has been one of the most important industries engaging the attention of mankind, but until the more recent centuries they were kept for the wool and milk which they furnish rather than for their flesh. Prior to the eighteenth century, their flesh-producing properties received but little attention.

The sheep was a domesticated animal in Asia and Europe before the dawn of history, though unknown in this state in America until after the Spanish conquest. This industry has now been introduced by man into all parts of the world where agricultural operations are carried on, but flourishes especially in the temperate regions of both hemispheres.

By careful breeding man has brought sheep to the state where their covering of wool, once a coating only sufficient to afford protection from the weather, has become a very serious load. In certain of our highly developed varieties the annual coat is so far increased that the creature loses a large part of its bulk after the shearer has done his work. Each year's fleece often amounts in weight to from eight to twelve pounds, and in its lifetime the animal may yield a mass of wool far exceeding its weight of flesh in any time of its life.

As a flesh producer, particularly in semi-arid regions, sheep are more valuable than cattle. They mature more rapidly, attaining their adult size and reproducing their kind in less than two years so that in many parts of this country it is possible to obtain a larger quantity of flesh from poor pasturage with sheep than any other of our domesticated animals.

Their principal value has always been the production of wool from which the finest woollen fabrics are woven.

The sheep industry of this country is becoming highly specialized and with the improvement of the breeds has brought about a demand for mutton, making this a valuable adjunct to the wool industry and the present high prices are a splendid indication of this fact.

The gradual trend of breeders seems to be toward the development of an ideal



**THE GRAND CHAMPION
SHOPSHIRE RAM
OF 1911.**

Grand Champion ram over all breeds at the National Mid-Winter Sheep Show, Omaha, Neb. Champion Shropshire ram at Indiana State Fair. Champion Shropshire ram at Ohio State Fair. Champion Shropshire ram at New York State Fair. Champion Shropshire ram at Michigan State Fair

type which combines the mutton and wool qualities; and the finer distinctions of fine woolen breeds, medium or middle woolen breeds and the coarse woolen breeds seem to be losing ground, from the fact that the influences of climate and food produce different variations in the same breed.

The sheep industry must be viewed from two different standpoints, viz., as conducted by the large ranchman, who devotes all his time to this particular industry, and second, the average stock raiser.

We do not deem it necessary to discuss the larger industry but rather the advantage of sheep on the average farm.

A small band of sheep on the average farm will keep it free from weeds and shrubs and they relish to a greater extent than other animals such coarse feed as straw and corn stover. They require but little attention as they can be turned out early in the spring and can be left out late in the fall. After a field has been cleared of the grain crop sheep can be turned in and they will thrive on food they find there by cleaning up much that cattle will not find or eat.

They require but little shelter; a shed opening to the south to protect them from the cold winds and giving them plenty of sunshine being all that is necessary under the ordinary climatic conditions. All sheds, however, should have a rain tight roof in order to protect them during driving rains in the summer time and snows in the winter.

From twelve to fifteen sheep can ordinarily be pastured on one acre of ground which proves to be a good investment to the average farmer whether he raises them for wool or mutton.

Land that has been worn out for crop growing is a splendid place to turn sheep into for it is a well known fact that where sheep are constantly kept the fertility of the soil is increased.



Champion Dorset Ram—Dorsets are Very Prolific and Especially Good for the Spring Lamb Trade.



Champion Rambouillet Ram—Western Type.

Sheep are fond of rolling land and usually seek the highest places. In this regard they are very much like the goat. In the absence of good fences, they require constant attention as they are naturally timid, without self-reliance, and an easy prey for dogs.

SELECTION—Any of the standard breeds of sheep can be raised by the average stock raiser with a good profit. It is better to start with pure bred sheep but even if flocks are not full-blooded, it is possible to build them up rapidly by using good Rambouillet, Shropshire, Dorset, Suffolk Down, Hampshire Down and Oxford Down rams for fleece and desirable mutton.

The proper breeding age is from eighteen months to two years and may continue until ten years old. From the age of three to eight years the best lambs are produced.

COUPLING—November is usually the best time, if you are breeding for mutton and wool it may be later than this, as the lambs will do better if not dropped until after the time for grass. If the object is to sell lambs, the earlier in the season they are produced the more money they usually bring. See parturition table for the period of gestation in sheep.

LAMBING—At this time the ewe should be provided with warm quarters so that the lamb may dry off and take the teat as soon as possible. Ewes are very apt to become indifferent to a weak lamb and often just a little attention will make them one of the best sheep in the flock.

Like all other animals sheep are affected with preventible diseases such as scab, lice, ticks, intestinal parasites, foot-rot, etc. Such agents as Watkins Stock Tonic, Special Worm Destroyer and Watkins Germicide Dip and Disinfectant are indispensable to the sheep raiser. For detailed description of these and other diseases and the application of the above preparations see sections five and six.



Valuable Prize-winning Buff Wyandotte Cock and Hen, Bred and Owned by Henry Hess, of Winona, Minnesota, and Fed Watkins Poultry Tonic.

Poultry Raising

IN every business, if properly conducted, there are good profits and the raising of poultry is now bringing good returns to those who give this industry careful study. On the average farm, poultry raising has not been kept to the front, in fact it has not kept pace with other branches of agricultural progress. Now there is no royal road to success, even in chicken raising. However, it will prove successful if the average poultryman of today will use plenty of common sense, keep up with the times, produce only the best, and always be on the lookout to decrease his expenses and increase his profits.

It should be remembered that the first qualification of poultry raising is to have a liking or inclination for this line of work, in order to be successful. Any one on the average farm who cares for even a small flock of birds carefully will be rewarded each year with a handsome profit.

For the beginner, or the improvement of a flock, the start should be made in a small way with a few fowls, and learn the business thoroughly before making large investments. In other words make small investments and have the proposition always on a paying basis before putting too much capital into the business. If the beginner has had experience in poultry keeping, it will be all right to purchase eggs, otherwise he should begin with fowls, and thus gain some knowledge of properly caring for poultry before attempting to raise chickens.

Another point that must be decided and that rests largely on the immediate surroundings, is the type to develop, as chickens are now usually classified as egg breeds, meat breeds, general purpose breeds and the fancy or ornamental breeds.

THE EGG BREEDS include the small or medium-sized fowls which are very active, quick to mature, producers of white shelled eggs, usually non-sitters or at best poor sitters, and rather poor mothers.

The various varieties of Leghorns and Minorcas are good representatives of this class. Because they are poor sitters, some other breed, or at least a few others fowls, should be kept if natural methods of incubation are to be employed. The fowls of this class have large combs and wattles, which make them rather sensitive to low temperatures.

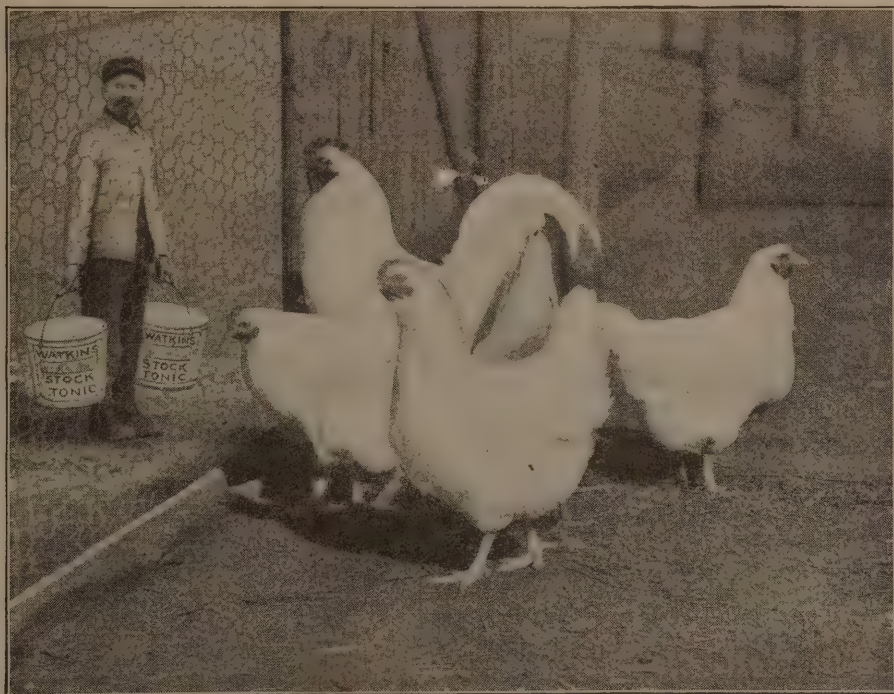
MEAT BREEDS—They are slow and somewhat sluggish in movement, with little desire for foraging, easily confined by low fences, rather slow to mature, persistent sitters, and rather indifferent layers of large brown-shelled eggs. Many poultrymen, however, are getting very good egg yields from them. The Brahmas, Cochins and Langshans are representatives of this class.

GENERAL PURPOSE BREEDS—This class includes fowls which are of fair size and which produce a good quantity of brown-shelled eggs, making them especially adapted to the person wishing a supply of both eggs and meat. As one who has to make frequent sales of flesh in the shape of surplus cockerels and hens, the carcass as well as egg production should be considered. The general-purpose breeds are usually good sitters and good mothers. They have medium-sized combs and wattles and endure cold weather well. They occupy a medium position between the egg and meat breeds, as to size, egg production, and docility. The Plymouth Rocks, Wyandottes, Orpingtons and Rhode Island Reds are good representatives of this class.

The Plymouth Rock is easily the most popular of all breeds of poultry as a general-purpose fowl.

The Barred variety is the best known and its history dates back over a quarter of a century.

For the average farmer these fowls should be the favorites, being of medium size, well proportioned, with a deep full breast, making a most admirable bird for market purposes. They are hardy, mature early, and make excellent broilers when from 8 to 12 weeks old. They are good layers the year round, and in winter lay exceptionally well. The Wyandottes, Javas, Dominiques and Rhode Island Reds all have excellent qualities as general purpose fowls.



White Plymouth Rocks.

PRACTICAL POULTRY POINTERS.

THE raiser of scrub chickens sells his surplus stock at from two to four dollars per dozen, while the breeder of thoroughbred fowls at from ten to fifty dollars per dozen, and often with little trouble to make the sales. Which do you consider the more profitable especially when you take into consideration that it does not cost any more to feed the best?

To make good layers, hens must have a regular and sufficient supply of egg forming material, like green cut bone, scalded bran, oats, barley and corn to which has been added Watkins Poultry Tonic according to directions. During the summer months while free to range they can not be expected to do well unless properly looked after. In Watkins Poultry Tonic you have the best combination to meet this condition that is on the market.

When your space is limited be all the more careful to keep the quarters clean, especially if the chickens cannot get out much, by carefully disinfecting the premises with Watkins Germicide Dip and Disinfectant.



Barred Plymouth Rock Hen—General Purpose Type.

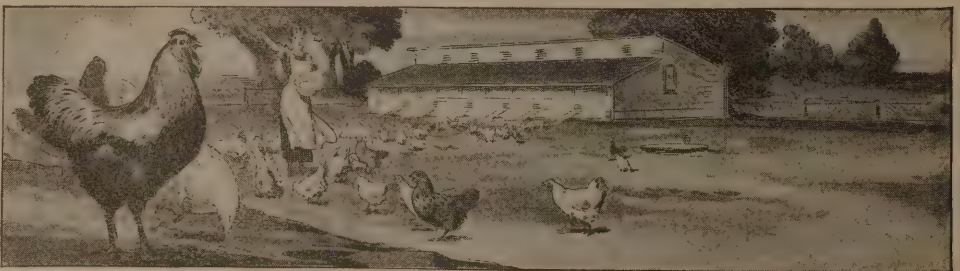
If your fowls are not doing well, examine them closely and see if they are not infected with vermin. The application of Watkins Louse Killer, and Watkins Germicide, Dip and Disinfectant will rid the fowls and premises of these troublesome pests. Remember there is no money in feeding lice.

In feeding for winter eggs, experiments have shown that pullets will stand forcing much better than old hens. Remember that at all times it is the hen that is given a good amount of exercise that is the best egg producer. Therefore it is a good plan to scatter some grain ration in straw, as it compels the hens to scratch for the feed and gives them proper exercise.

When forcing pullets or hens, be sure to give them Watkins Poultry Tonic with their feed ration. In feeding for market, fowls should not be given wide

range, as this causes them to lose part of their flesh which they should retain, for it is always advisable to secure the greatest gain in the least possible time.

The food of fowls should be varied. Feed may be divided into three classes: First, grains or seeds; second, green plants; third, animal food. The first includes corn, oats, brewer's grains, etc., while the second includes boiled potatoes and raw cabbage in the winter; and clover, alfalfa and fresh vegetables in the summer time. Animal foods comprise meat scraps, insects, green bone, etc. The most approved feeding methods include all three classes in the daily ration. Watkins Poultry Tonic will assist the fowls to assimilate the greatest portion of food elements from the feed.



Chicks hatched in the spring of the year should be given plenty of sunshine and air. Do not allow them to run in deep, damp grass as this causes them to be chilled and catch cold. Incubator chicks or others which are hatched very early in the season should generally be put in brooders until they are old enough to stand the chilly spring days. Young chicks should be kept off the ground at night. Put a floor in the coop and cover it with hay-mow sweepings in which is sprinkled some grit and Watkins Poultry Tonic. Always keep a supply of pure fresh drinking water for the chicks.

It is a splendid rule to let the chicks work for their feed. The exercise they get in scratching in the hay for their feed will give them vigor and prevent their suffering from indigestion.

Dry food is usually better for chicks though, if they do not seem to be thriving on this diet, a little thoroughly boiled rice or boiled wheat may be given every other day until the chicks are two or three weeks old. Supply plenty of fresh raw vegetables such as potatoes or beets. The yolk of a hard boiled egg is a splendid food for developing young chicks under two weeks old. Allow one egg for each twenty-five chicks and it can be mixed with some of Watkins Poultry Tonic. Chicks should feather out under ordinary weather conditions when from six to eight weeks old. When the chicks are moved into colony coops care should be taken that they are not too crowded. It is better to have a number of portable coops and around this build a run for the chicks. Do not put more than twenty-five or thirty birds in a flock, and be sure to see that the floor of the coop is covered with cut straw or chaff and keep a liberal supply of Watkins Poultry Tonic, grit and pure water accessible.

Unless there is some necessity for doing otherwise, birds after they have feathered should be allowed free range.

Geese are more distinctively grazers than any other fowls, and will keep the grass eaten off as close as sheep. Besides the value of their flesh for food, the feathers are an item of considerable profit and should pay keeping expenses.

Water fowls, ducks, geese, etc., do not require large bodies of water as has generally been supposed, and some of the most successful duck raisers only provide water for drinking purposes.

Turkeys require and must have considerable range, and they must be allowed full liberty with their young after they begin to feather, or they will surely not keep in good health. Some farmers are reaping handsome profits at the present high prices from this national bird.

And last but not least, one of the secrets of success in poultry raising is liking the work. It should not be an assumed pleasure to take care of fowls.



A Yard of White Leghorns—Egg Type.

REDUCING THE LOSSES FROM BAD EGGS.

(An excerpt from annual report of the Department of Agriculture of 1912.)

"A few years ago the study of the losses from the spoiling of eggs because of bad methods of producing and handling showed that these losses probably amounted to \$450,000 annually, and that one-third of this loss was caused by the formation of "blood rings" in the eggs, due to the development of the germ by heat. As this loss from blood rings is directly preventable on the farm, the bureau has been endeavoring to bring to the notice of farmers and poultry raisers the means by which this can be done. The remedy is to produce infertile eggs, that is eggs from hens that are not allowed to run with male birds. Such eggs will not hatch and blood rings will not develop in them. Early in the year Bulletin 141, The Improvement of the Farm Egg, was issued, and a bulletin on the Care of the Farm Egg is in press. A very striking poster arranged by Mr. Harry M. Lamon, of the Animal Husbandry Division, has also been issued. It shows pictures of fertile and infertile eggs after incubation from one to seven days, the former showing blood rings and chick development, while the latter are apparently unchanged from the perfectly fresh condition.

As another means of improving the quality of eggs and preventing losses the bureau is advocating the "loss-off" or quality basis of buying by merchants. Cooperative work to establish this method has been carried on in some of the leading egg-producing states.

With the general adoption of better methods of producing, marketing, and handling eggs, it is easily possible to reduce greatly the losses and to bring about great improvement in the quality of eggs on the market, to the common benefit of farmers, dealers and consumers."

Do not fail to get the above mentioned bulletins by making application for them to your District Congressman or directly to the Secretary of Agriculture. They are free for the asking.



Buff Cochins—Meat Type.



Animal Nomenclature.

Custom and writers have established certain specific terms regarding the species, sex, and age of domestic animals, which are somewhat confusing to the average person. The following classifications will prove useful to readers on these subjects.

Genus *Equus*; specific term, Horse. The animal is, viz: a "Foal," irrespective of sex, from birth until weaned; a "Weanling," when weaned until a "Yearling." The male animal is, viz: a "Colt," until the mouth is made or until castrated; custom has, however, accepted the first indication of the corner teeth, or four years, as the age at which he becomes a horse; a Gelding," after castration, at any age; a "Horse or Stallion" after the mouth is made, or earlier if he stands for service; a "Ridgling," if one testicle has not descended to the scrotum. The female is, viz: a "Filly," until the mouth is made, or until bred; a "Mare," after the mouth is made, or sooner if bred.

"Species *asinus*." Specific term, "Ass." The ass is, viz: a "Foal" until weaned; after that the male animal is a "Jack," the female a "Jenny." The male mule is known as a "Jack Mule," irrespective of gelding, and the female is a "Jenny Mule." The hybrid foal of the male ass and the mare is the true mule. That between the stallion and the female ass is called the "Hinny."

Genus *Bos*; "species *domesticus*." Specific term, Neat Cattle. The animal is, viz: a calf," until six months old (the natural time for weaning;) a "Bullock" is a young bull, or any male of the ox kind; a "Bull" is the male animal; a "Steer;" is the castrated male of neat cattle. He is called an ox-calf or bull-calf until he is twelve months old, a steer until he is four years old, and after that an ox or bullock. An ox is the same as steer; a "Stag" is a castrated male; a "Heifer" is the female until bred, or until the mouth is made; a "Cow" is the female after breeding, or when the mouth is made.

Genus *Ovis*; "Species *aries*." Specific term, "Sheep." The animal is viz: a "Lamb" until a year old: "Ram or a Tup" when male over eighteen months old and has its first intermediate permanent teeth; a "Ewe" when female over eighteen months old, and has its first intermediate teeth; a "Wether" when a castrated male; a "Hogget" is the young sheep before it has been shorn.

Genus *Capra*; "Species *hircus*." Specific term, "Goat." The animal is viz: a "Kid" until a year old; a "Billy" is the male, a "Nanny" the female.

Genus *Sus*; "Species *scrofa*." Specific term, "Swine, Pigs, Hogs." The animal is, viz: a "Suckling" until weaned; a "Roaster" from four to eight weeks old; a "Pig" until a year old, male or female; a "Porker, Porket or Porkling" is a young hog or pig; a "Boar" is the adult male; a "Sow" the adult female; a "Shoat, Shote, or Shoot" is a growing hog; a "Barrow" is a castrated hog; a "Farrow" is a litter of pigs.

Genus *Canis*; "Species *domesticus*." Specific term, "Dog." A "Puppy" is the young; a "Dog" is the male; a "Bitch or Slut" the female, the former term is preferable.

Genus *Gallus*; "Species *domesticus*." Specific term, "Chicken, Barnyard Fowls, Pullail. A "Cock" is the male; a "Cockerel" is a young cock; a "Stag" is a young game cock; a "Capon" is a castrated male; a "Hen" is the female; a "Pullet" is the young female; "Poultry" are the fowls fed for the table.

PARTURITION TABLE

Conception	Date of Birth			
Date	Mare 340 days	Cow 284 days	Sheep 152 days	Swine 120 days
Jan. 1	Dec. 6	Oct. 11	June 1	Apr. 30
Jan. 6	Dec. 11	Oct. 16	June 6	May 5
Jan. 11	Dec. 16	Oct. 21	June 11	May 10
Jan. 16	Dec. 21	Oct. 31	June 16	May 15
Jan. 21	Dec. 26	Oct. 31	June 21	May 20
Jan. 26	Dec. 31	Nov. 5	June 26	May 25
Jan. 31	Jan. 5	Nov. 10	July 1	May 30
Feb. 5	Jan. 10	Nov. 15	July 6	June 4
Feb. 10	Jan. 15	Nov. 20	July 11	June 9
Feb. 15	Jan. 20	Nov. 25	July 16	June 14
Feb. 20	Jan. 25	Nov. 30	July 21	June 19
Feb. 25	Jan. 30	Dec. 5	July 26	June 24
Mar. 2	Feb. 4	Dec. 10	July 31	June 29
Mar. 7	Feb. 9	Dec. 15	Aug. 5	July 4
Mar. 12	Feb. 14	Dec. 20	Aug. 10	July 9
Mar. 17	Feb. 19	Dec. 25	Aug. 15	July 14
Mar. 22	Feb. 24	Dec. 30	Aug. 20	July 19
Mar. 27	Mar. 1	Jan. 4	Aug. 25	July 24
Apr. 1	Mar. 6	Jan. 9	Aug. 30	July 29
Apr. 6	Mar. 11	Jan. 14	Sept 4	Aug. 3
Apr. 11	Mar. 16	Jan. 19	Sept 9	Aug. 8
Apr. 16	Mar. 21	Jan. 24	Sept 14	Aug. 13
Apr. 21	Mar. 26	Jan. 29	Sept 19	Aug. 18
Apr. 26	Mar. 31	Feb. 3	Sept 24	Aug. 23
May 1	Apr. 5	Feb. 8	Sept 29	Aug. 28
May 6	Apr. 10	Feb. 13	Oct. 4	Sept 2
May 11	Apr. 15	Feb. 18	Oct. 9	Sept 7
May 16	Apr. 20	Feb. 23	Oct. 14	Sept 12
May 21	Apr. 25	Feb. 28	Oct. 19	Sept 17
May 26	Apr. 30	Mar. 5	Oct. 24	Sept 22
May 31	May 5	Mar. 10	Oct. 29	Sept 27
June 5	May 10	Mar. 15	Nov. 3	Oct. 2
June 10	May 15	Mar. 20	Nov. 8	Oct. 7
June 15	May 20	Mar. 25	Nov. 13	Oct. 12
June 20	May 25	Mar. 30	Nov. 18	Oct. 17
June 25	May 30	Apr. 4	Nov. 32	Oct. 22
June 30	June 4	Apr. 9	Nov. 28	Oct. 27
July 5	June 9	Apr. 14	Dec. 3	Nov. 1
July 10	June 14	Apr. 19	Dec. 8	Nov. 6
July 15	June 19	Apr. 24	Dec. 13	Nov. 11
July 20	June 24	Apr. 29	Dec. 18	Nov. 16
July 25	June 29	May 4	Dec. 23	Nov. 21
July 30	July 4	May 9	Dec. 28	Nov 26
Aug. 4	July 9	May 14	Jan. 2	Dec. 1
Aug. 9	July 14	May 19	Jan. 7	Dec. 6
Aug. 14	July 19	May 24	Jan. 12	Dec. 11
Aug. 19	July 24	May 29	Jan. 17	Dec. 16
Aug. 24	July 29	June 3	Jan. 22	Dec. 21
Aug. 29	Aug. 3	June 8	Jan. 27	Dec. 26

PARTURITION TABLE

Conception	Date of Birth			
Date	Mare 340 days	Cow 284 days	Sheep 152 days	Swine 120 days
Sept 3	Aug. 8	June 13	Feb. 1	Dec. 31
Sept 8	Aug. 13	June 18	Feb. 6	Jan. 5
Sept 13	Aug. 18	June 23	Feb. 11	Jan. 10
Sept 18	Aug. 23	June 28	Feb. 16	Jan. 15
Sept 23	Aug. 28	July 3	Feb. 21	Jan. 20
Sept 28	Sept 2	July 8	Feb. 26	Jan. 25
Oct. 3	Sept 7	July 13	Mar. 3	Jan. 30
Oct. 8	Sept 12	July 18	Mar. 8	Feb. 4
Oct. 13	Sept 17	July 23	Mar. 13	Feb. 9
Oct. 18	Sept 22	July 28	Mar. 18	Feb. 14
Oct. 23	Sept 27	Aug. 2	Mar. 23	Feb. 19
Oct. 28	Oct. 2	Aug. 7	Mar. 28	Feb. 24
Nov. 2	Oct. 7	Aug. 12	Apr. 2	Mar. 1
Nov. 7	Oct. 12	Aug. 17	Apr. 7	Mar. 6
Nov. 12	Oct. 17	Aug. 22	Apr. 12	Mar. 11
Nov. 17	Oct. 22	Aug. 27	Apr. 17	Mar. 16
Nov. 22	Oct. 27	Sept 1	Apr. 22	Mar. 21
Nov. 27	Nov. 1	Sept 6	Apr. 27	Mar. 26
Dec. 2	Nov. 6	Sept 11	May 3	Mar. 31
Dec. 7	Nov. 11	Sept 16	May 7	Apr. 5
Dec. 12	Nov. 16	Sept 21	May 12	Apr. 10
Dec. 17	Nov. 21	Sept 26	May 17	Apr. 15
Dec. 22	Nov. 26	Oct. 1	May 22	Apr. 20
Dec. 27	Dec. 1	Oct. 6	May 27	Apr. 25
Dec. 31	Dec. 5	Oct. 10	June 1	Apr. 29

THE EXAMINATION OF SICK ANIMALS.

IN the examination of sick animals it is important to have a method, or system. In no other way can one feel reasonably sure, when the examination is finished that no important point has been overlooked. To the unskilled observer there will be many things escape notice that would be found readily by an experienced eye, or a trained hand. It is only by having a thorough knowledge of the conditions that exist in health that one can quickly and accurately detect wrong conditions. In order to be accurate in diagnosing disease of any kind one should have a knowledge of anatomy, or of the structure of the body and of physiology.

In making a physical examination of the body note the general condition of the animal. Sometimes animals assume positions that are characteristic of a certain disease. For example, a horse with tetanus stands with his muscle tense and his legs in a somewhat braced position, as though he were gathered to repel a shock.

Abnormal attitudes are assumed in painful diseases of the digestive organs. A horse with colic may sit upon his haunches, like a dog, or may stand upon his hind feet and rest upon his knees in front, or may endeavor to balance himself upon his back, with all four feet in the air. These positions are assumed because they give relief from pain by lessening pressure, or tension, upon the sensitive structures.

Another example is the well known symptoms of milk fever in cows which comes on usually from twenty-four to forty-eight hours after calving and are denoted by a staggering gait; uneasiness, followed by a gradual loss of control over movements; and difficulty in rising, more especially the uplifting of the hind quarters. In the course of a few hours, the animal is unable to get up, even though it may make repeated attempts.. In due course of time the head is turned toward the breast or flank, and the loss of consciousness frequently follows.

In taking the pulse, stand at the left side of the horse and run the finger along the lower jaw until you come to the point where the artery crosses the jaw at its lower edge.

This will be found about two inches forward from its angle. Right here there is a large muscle and at the front edge the pulsations may be caught. In taking the pulse of the cow, stand on the left side, reach over the neck and take it from the right jaw in about the same relative position as on a horse. The number of pulsations in a given time, although of value in the prognosis of the disease, is quite secondary to the character of the pulsation, and this is where the difficulty arises for the ordinary observer.

The normal amount of pulsations in a horse per minute, is from thirty-six to forty-five; but in a foal this number is doubled; in the ox about fifty per minute. Sheep and pigs afford no reasonable chances for obtaining the pulse. The pulsations are spoken of in accordance with their character, as hard or wiry, soft, quick, slow, full, irregular, intermittent, etc.

Whenever the tension in the arteries is increased, as in acute engorgement of the lungs, founder, etc., the pulsations may be raised to perhaps 100 per minute, and their volume small; the diminution in each pulsation being due to the rapidity of the heart's contraction, and the diminished recoil in the wall of the vessel.

The temperature or internal body heat, though subject to variability through external influences, of the different animals is as follows: Normal for the horse, 100 F., ox 101 F. to 102, sheep 102 F., pig 102 F. Exercise causes a marked increase in temperature.

Animals seldom survive when the temperature rises above 107 F. A good clinical thermometer should be in the possession of every stock raiser. It costs but little, and its aid in recognizing and treating disease is helpful. The proper way of taking temperatures in domestic animals is by inserting the thermometer in the rectum for at least one minute duration.



Scenes from Watkins Stock and Poultry Manufacturing Department Together with one of the men who represent the "Watkins Way."

In taking the respiration two movements should be observed, the taking in and the sending out of the air. In health the respiration is usually constant ranging from 10 to 14 in horses, and from 15 to 20 in cattle. Breathing is faster in young animals, and exercise increases the number of respirations per minute.

Any disease of the respiratory organs will cause the breathing to be short, rapid and labored. If the number of respirations are more than normal in connection with a rapid pulse some disturbance is indicated, and the trouble should be sought for at once.

CARING FOR SICK ANIMALS.

NO matter what the trouble may be, good nursing is of paramount importance, and veterinary surgeons are well aware of difference in the progress in the hands of a good, bad or indifferent nurse. Stables and premises should be kept scrupulously clean and further infection prevented by the aid of pure air, sunlight if possible, and the liberal use of an agent like Watkins Germicide, Dip and Disinfectant. Draughts must be excluded, but the stables must not be allowed to be overheated. An equable, slightly moist atmosphere is the one most desirable.

When animals are unconscious, for example, milk fever in a cow, no effort must be made to force liquid or food down the throat, otherwise the animal may be choked. The natural orifices should be kept clean by constant cleansing with an antiseptic solution in water, taking particular care that the sponge is not employed for any other purpose. It must be borne in mind that the nasal discharge, in conditions like distemper of the horse, constitutes an easy means of spreading infection, therefore it should not be allowed to hang about the mangers, etc. These should be disinfected daily with an agent like Watkins Germicide, Dip and Disinfectant. Light horses should have an agent like Watkins Liniment and flannel bandages applied to the lower parts of their limbs, as these are of material assistance in maintaining warmth in the lower parts of the extremities.

For injuries to the feet of horses, it is customary to apply hot poultices to the feet daily. Three or four folds of stout sacking, should be sewed together so as to form a sort of jack boot, and a thick layer of the poultice put at the bottom and tied on. To supplant poulticing of both horses and cattle, the foot may be allowed to stand in a bucket of hot water, say for an hour or two, to which some antiseptic has been added. For abscesses, bruises, etc., situated externally, the parts should be bathed several times daily with hot water. Sprains about the lower parts of the limbs of horses, say, for the first 12 hours or so can be bathed with cold water, and cold water bandages applied over all. After this period hot water may be substituted. Preparations like Watkins Anodyne Liniment, Veterinary Lotion and Veterinary Ointment are valuable additions to poultices and fomentations.

BLISTERING is resorted to in chronic lameness. The first step in blistering is the clipping of the hair over the diseased parts, and the removal of dirt and scurf attached to the skin. The blister should be worked into the skin, and usually ten minutes of rubbing will be necessary to produce the desired results. The animal's head should be tied up short for about forty-eight hours so as to prevent the animal from biting the part. There is a marked difference in individual horses as to the susceptibility of the action of the blister. In some, blisters will arise in from ten to twelve hours, while in others twenty-four hours may elapse; and some swelling in the region is likely to be manifested. After the desired effect of the blister has been obtained, the blister should be washed off with warm water and soap. After drying apply vaseline or some other agent and repeat the operation daily until all scabs are removed. Watkins Veterinary Blister and Petro-Carbo Salve are a successful combination in the treatment of all chronic ailments caused by bone spavins, ring bones, side bones, splints, sweeny, etc.

The administration of medicines to the various animals requires a certain amount of skill and practice. Some horses are easily drenched, while others are

extremely difficult to give medicine to; and in exceptional instances, it is impossible to do so.

Sheep and pigs require great care, otherwise they will be choked. Liquids should be given very slowly to both these animals, and the maximum amount of fluid for either should not as a rule exceed a pint. For the holding and giving of the fluid a metal syringe is the best for pigs while for sheep a horn or bottle does very well. So long as a pig continues to feed the best plan is to give the medicine in combination with the food. If forcible administration is resorted to, the animal should be driven into a small holding pen where they have little room to move about. To hold the animal while drenching it, a noose of sash cord or quarter-inch rope can be placed around the upper jaw well back toward the angles of the lips, and the medicine thrown into the back part of the mouth. Sometimes when the drench is bulky and the hog hard to hold, it is necessary to elevate the head and raise the forefeet off the ground. For this purpose a pulley and rope wire stretcher is recommended.

It is best to wait until the hog has become quiet and well under control before giving it the drench, as there is some danger of the medicine getting into the air passages and doing harm. If there is any chance for the hogs that have been dosed to become mixed with the others, they should be marked with paint or other suitable material in order to avoid mistakes. Soluble drugs are the best given in milk or water drench, insoluble ones in syrup or oil. Watkins Special Worm Destroyer can be administered by the aid of the above named vehicles. In all cases it is not advisable to use glass bottles for drenching purposes as there is danger of them being broken in the animal's mouth.

Cattle are easily drenched, and several quarts of liquid may be given but the average amount is about a quart. A horn, tin or glass bottle answers the purpose, and should be grasped by the right hand, while the left hand is passed around the head and in at the left hand side of the jaw, so as to bring pressure on the roof of the mouth and pull the head backwards.

A convenient method of giving the horse medicine is in the form of an electuary, in which the active agents are combined with some sticky substance such as molasses and placed well back on the tongue with a wooden paddle. This method is particularly valuable in administering Watkins Stock Tonic when an animal is out of condition and somewhat off feed and refuses to take the Tonic in the regular food rations. In giving liquids to the horse, the drench should not exceed a pint under ordinary circumstances. It is necessary to place the head under restraint keeping the head well elevated during the time the animal has the fluid in its mouth.

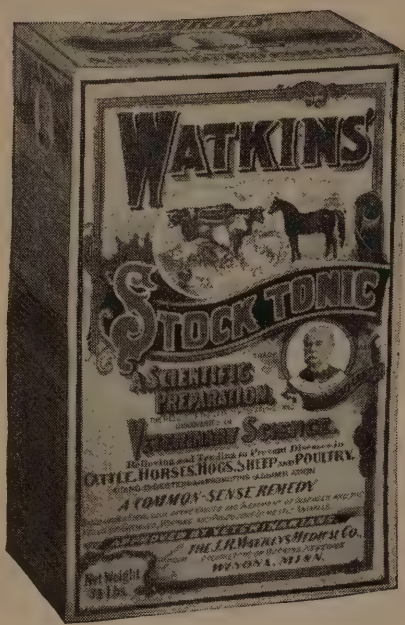
Some stock raisers resort to the pernicious practice of striking the throat while others in order to cause the animal to swallow quickly pour a little of the fluid down the nostrils. Too much cannot be said in condemning this practice. If a horse should hold the medicine in its mouth for a long time, the best plan is to roll the fingers beneath the tongue, or manipulate that organ in some other way so as to induce swallowing.

The feeding of sick animals when laboring under disease demands a great deal of tact and patience, and there is a wonderful difference between individuals in this respect. One of the worst faults that we are acquainted with is that of allowing food to remain before a sick animal—the presence of which tends to satiate it. Whatever food is given should be given in small quantities and often, more especially to horses, the stomach being small.

For sick horses—when procurable—green food is desirable, such as clover, meadow-grass, etc., while carrots or turnips given whole or grated will often tempt the appetite. A bran mash or the addition of linseed meal or crushed oats scalded with hot water, and given in small quantities is extremely useful. Crushed linseed-cake, crushed oats, cabbage, natural grass, potatoes and gruel are the usual food substances given to cattle. Always feed sick animals early in the morning and last thing at night, with additional feeds between, but no food should be allowed to remain before the patient.

Water should be available at all times. It is better to give small amounts at frequent intervals.

Watkins Stock Tonic.



A Scientific Preparation: The Result of the Largest Researches and Discoveries in VETERINARY SCIENCE. Relieving and tending to prevent disease in CATTLE, HORSES, HOGS AND SHEEP. Aiding Digestion and Promoting Assimilation. A COMMON SENSE REMEDY. Based upon a knowledge of the causes and treatment of diseases and the needs of growing, working and productive domestic animals. APPROVED BY VETERINARIANS.

GUARANTEED TO COMPLY WITH THE FOOD AND DRUGS ACT OF JUNE 30, 1906.

NO SECRET, NO MYSTERY. When you buy and use WATKINS STOCK TONIC, you know exactly what you are paying your money for, and exactly what you are feeding your livestock.

Notice particularly that we give, not only a complete list of ingredients of Watkins Stock Tonic, and Poultry Tonics and other preparations but also a complete chemical analysis. We go much farther than the Pure Food Law de-

mands in our efforts to show our customers the purity and value of our products. So far as we know The J. R. Watkins Medical Company has the only tonics on the market which the livestock raiser can use with full confidence that he knows exactly what he is using. Use WATKINS STOCK TONICS and be sure of results.

COMPLETE LIST OF INGREDIENTS OF WATKINS STOCK TONIC

Areca Berries.	Ground Linseed Meal,	Sulphur.
Capsicum.	Charcoal,	Mandrake Root.
Sulphate of Iron	American Worm Seed.	Cascara Sagrada.
Bi-Carbonate of Soda.	Gentian Root.	Pumpkin Seeds.
Sodium Chloride.	Ginger Root.	Fenugreek Seeds.
Salt of Tartar.	Elecampane Root.	Coriander Seeds.
Standard Middlings,		Anise Seed.

COMPLETE CHEMICAL ANALYSIS OF WATKINS STOCK TONIC.

Moisture -----	8.1300%	Iron, Aluminum Oxides ----	1.9444%
Fat -----	7.6800%	Silicic Acid -----	1.5210%
Protein -----	10.6200%	Calcium Carbonate -----	0.0619%
Fibre -----	27.8800%	Magnesium Chloride -----	0.0879%
Carbohydrates -----	13.1200%	Sodium Chloride -----	27.2383%
		Sodium Sulphate -----	1.7165%

DILUENTS USED IN WATKINS STOCK TONIC.

The valuable tonic, worm-killing and blood-purifying ingredients used in Watkins Stock Tonic are of such a nature that they should not be administered to stock in an undiluted form. They are too strong. Just as we are obliged to use syrups in liquid medicine, so we must use diluents in our stock tonic. The diluents we use are:

Ground Linseed Meal -----	12.87%
Standard Middlings -----	21.45%
Sodium Chloride -----	30.04%

GENERAL DIRECTIONS FOR GIVING WATKINS STOCK TONIC.

In giving Watkins Stock Tonic, it is to be mixed with the animal's everyday feed, slightly moistened, if preferred. As it is a tonic, it is not intended to take the place of the regular feed, the quality and quantity of which should be regulated to suit the condition on the animal. Our Stock Tonic helps to make the animal properly digest its food; it acts on the organs of the body and aides each one in performing its proper functions.

HORSES.

TO a horse in fairly good condition, feed from one to two tablespoonfuls a day. For Coughs, Indigestion, Hide-Bound, Blood out of Order, Etc., feed with grain three tablespoonfuls three times a day. For Worms, let the animal go without eating for 12 to 18 hours, then give a large dose of the tonic, say four or five tablespoonfuls with a light feed.

CATTLE.

TWO or three times a day feed one or two large tablespoonfuls. This will have a tendency to increase the richness and quality of milk. **TO FAT-TEN CATTLE:** Along with good nourishing feed, at the regular feeding times, give to each animal one or two large tablespoonfuls, according to size of animal. This gives the animal an appetite and tends to make it eat more than it requires to perform the ordinary functions of life. This process aids in getting out of the feed about all there is in it, very little wasted, the surplus being turned into profit-producing fat.

HOGS.

UNDER diseases of domestic animals you will find full directions as to how to use Watkins Stock Tonic in the care of sick hogs. For fattening, Watkins Stock Tonic should be fed in slop, about half the quantity given to cattle, according to size.

SHEEP.

FOR each animal give about one-fourth as much as for cattle. The Tonic will help to increase the production of flesh and wool. Watkins Stock Tonic should be fed with the grain ration when you are feeding sheep for the market. Always give plenty of water. Lambs mature quickly and should be taught to eat grain as early as possible. Bran, oats, cracked corn or wheat screenings with a small portion of Watkins Stock Tonic will produce very rapid growth.

NOTE—Watkins Stock Tonic can be fed in self-feeders when proper care is taken to mix the Tonic well through the feed. It can also be given with safety to all pregnant animals.

WATKINS VEGETABLE ANODYNE LINIMENT.

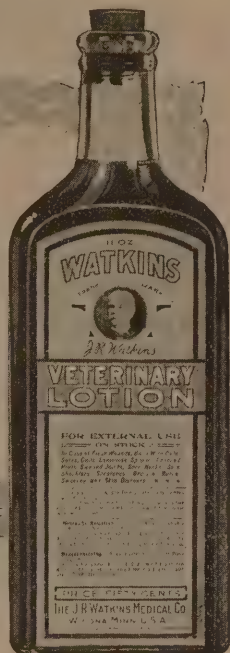
THE Genuine and Original WATKINS VEGETABLE ANODYNE LINIMENT. Beware of Counterfeits and Imitations. The Genuine and Original has our name and Trade-Mark blown in every bottle. There is vastly more of Watkins Vegetable Liniment used by the people of America than any other liniment. The better it is known the more popular it becomes. It is good for internal as well as external use, and for man or beast. It has a much wider range of usefulness than other medicines, it is almost indispensable in the homes and a necessary where stock is kept.



WATKINS VETERINARY LOTION.

FOR external use on live stock. The task that we have set before us is to supply to the farmers of North America a cheap, yet highly effective, local application for the ordinary ailments of stock. Owing to the way in which such a remedy must necessarily be applied, in which there is danger of some portion of it being wasted, a high-priced article is expensive to use. We have therefore combined in our formula some of the most antiseptic and healing ingredients known to medical science.

At the same time their cost is not prohibitive, and we are therefore able to give our patrons the benefit of a large bottle for only fifty cents, thus bringing it within the reach of all. Consult the section devoted to animal diseases, regarding the application of this lotion.



WATKINS VETERINARY OINTMENT.

HEALING, soothing, penetrating, antiseptic application for the cure of ailments, to which all kinds of domestic animals are subject. This ointment kills the disease germs, stops inflammation, prevents the formation of pus or matter, cleans or takes away impurities, and gives the place a chance



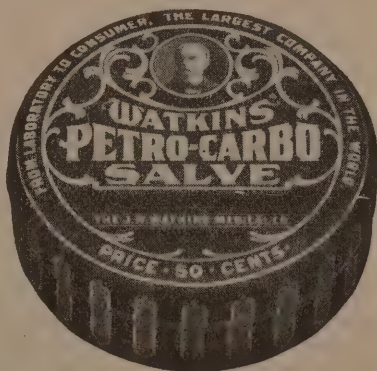
to heal quickly. Stockmen and farmers should always keep Watkins Veterinary Ointment on hand, so as to instantly give proper treatment for any accident that may happen to stock. By using this remedy at the start, it will often prevent a permanent injury or save the life of a valuable animal. The expense and trouble of such treatment is so slight that no one can possibly afford to be without Watkins Veterinary Ointment. A great remedy. Consult section (6) devoted to animal diseases.

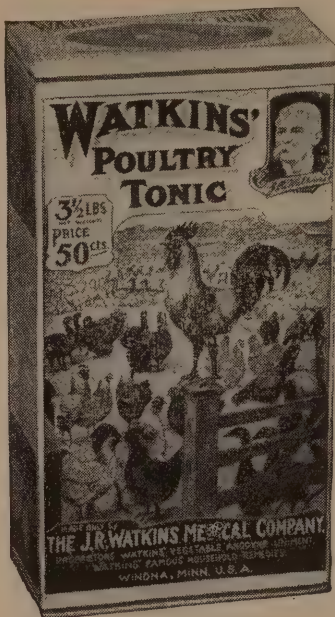
Every stockman or farmer realizes the necessity of having on hand, ready for instant use, an effective remedy

for the ordinary external ills of stock. Without looking at the humanitarian side of the case, from a business standpoint it is a profitable investment and a paying proposition. You do not like to see your animal suffer, and you cannot afford to lay out of its use any longer than necessary.

WATKINS PETRO-CARBO SALVE.

OWING TO THE WIDE SPREAD POPULARITY OF THIS PREPARATION WE ARE GOING TO TELL YOU MORE ABOUT IT IN THE SECTION DEVOTED TO ANIMAL DISEASES IN THIS MANUAL.





Watkins Poultry Tonic.

ANYTHING that helps keep disease from chickens is certain to increase profits; and in helping to do this Watkins Poultry Tonic is worth many times its cost. We are safeguarding your investment by giving you an open formula to consult.

WATKINS POULTRY TONIC—Guaranteed Under the Food and Drug Act, June 30, 1906.

CHEMICAL ANALYSIS.

Moisture	4.4800%
Fat	6.9500%
Protein	5.9900%
Fibre	20.9100%
Carbohydrates	13.8900%
Silicic Acid	1.0942%
Iron and Aluminum Oxides	1.9351%
Calcium Carbonate	44.6982%
Alkalies	0.0525%

DILUENTS.

Ground Mussel Shells	50.37%
American Ship Stuff	25.18%

The following is the percentage of diluents:

INGREDIENTS.

African Capsicum, African Ginger, Venetian Red, American Sulphur, French Gentian Root, Chinese Cantharides, American Ship Stuff, Ground Mussel Shells.

DIRECTIONS.

TO HELP MAKE HENS LAY: For twelve hens, feed two large tablespoonfuls two or three times daily, with wet (not sloppy) feed. The ingredients of this tonic are calculated to wonderfully stimulate the production of eggs, making firm, strong shells, which withstand handling.

AS A PREVENTATIVE OF DISEASE: For every twelve fowls, feed one large tablespoonful of the Tonic from two to three times daily, thoroughly mixed with wet feed. The well known medicinal ingredients of this tonic are most excellent in warding off disease to which poultry is subject.

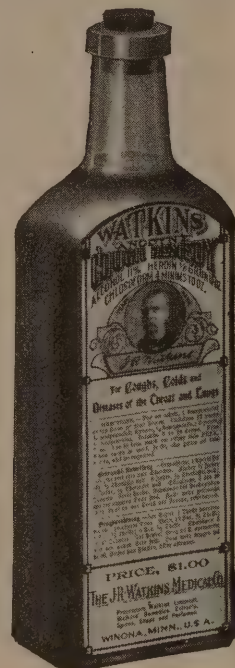
TO MAKE CHICKS GROW: For two to three dozen chicks, feed one to two large tablespoonfuls once or twice a day. This will promote rapid growth, making a large fowl in a comparatively short time.

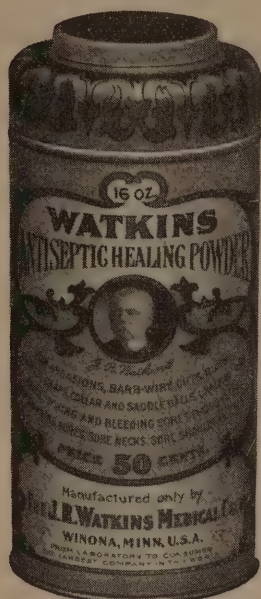
WHEN MOULTING: This Tonic stimulates the different organs, promotes good health and produces glossy plumage. Once or twice a day, feed one large tablespoonful, along with the regular feed, for every twelve fowls.

AS A RELIEF FROM CHICKEN CHOLERA: For every twelve fowls (according to size and breed) feed from six to eight tablespoonfuls of this tonic morning, noon and night. If too sick to eat, mix with water and pour down the throat.

WATKINS LOUSE KILLER.

FOR POULTRY: Take the fowl by the legs, holding downward, dusting Watkins Louse Killer thoroughly through the feathers and under the wings. If this operation is performed over a newspaper, all the powder





which fails to adhere to the fowl may thus be saved. Always dust hens when they begin to set, and again just before the brood is hatched. Watkins Louse Killer is a great germ-killer and powerful disinfectant, and as a preventative against contagious diseases should be sprinkled freely about coops and nests of fowls.

FOR HORSES, CATTLE, SHEEP, HOGS, AND DOGS: Dust the animal freely; rubbing Watkins Louse Killer against the hair, clear in until it touches the skin. The use of Watkins Louse Killer should be continued once or twice at intervals of a few days to prevent a recurrence of the trouble.

Watkins Louse Killer contains the following ingredients: 35% Tobacco, 12½% Napthaline, 12½% Lime, 40% Talc.

WATKINS BARB WIRE EMBROCATION.

This is a scientific remedy for horses and cattle that have been wounded in barb wire fences or in any other manner.

Useful in swellings and running sores; may be used to advantage in mange, scratches, stiff joints and lameness of all kinds; also to keep off flies and kill lice. A very valuable soothing, healing, antiseptic preparation.

WATKINS ANTISEPTIC HEALING POWDER.

Some of the best antiseptics known to medical science are incorporated in Watkins Antiseptic Healing Powder. As a safeguard against infections of wounds, sores, galls, etc. This powder makes a very valuable addition to the farmer's stock of home remedies and it should find a place on every farm. Don't neglect a wound or scratch that seems trifling to you. Infection may set in if not properly cared for, and serious loss and trouble may result.

It is indicated in abrasions, barbwire cuts, burns, chafes, chaps, collar and saddle galls, cracked skin, itching and bleeding sores, etc.

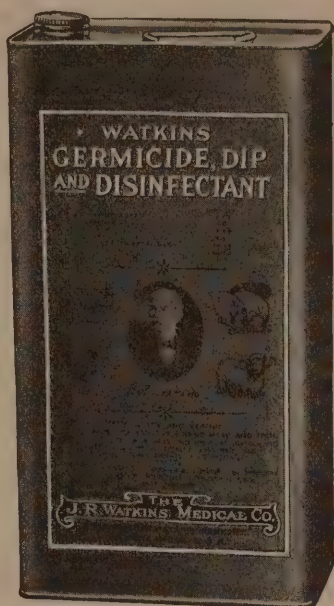
DIRECTIONS: Wash the wound or gall with good soap and water thoroughly cleansing it and then sprinkle with the powder several times daily.

WATKINS GALL OINTMENT.

Accidents are continually happening to horses and cattle, which, if attended to promptly, may be readily helped by the use of the proper remedy, but if neglected, may result in permanent injury to the animal. It is all important then, that there should be at hand at all times Watkins Gall Ointment. It is always ready for use and effective. It is one of the most cleansing, soothing and healing ointments offered to horsemen. It arrests inflammation, prevents formation of pus, cleans and removes all impurities from sores and helps to heal them rapidly.

DIRECTIONS: When harnessing the horse cover with Watkins Gall Ointment all galls and sores liable to be chafed. For scratches and sores not covered by the harness, rub the ointment on hard several times a day until the old scabs come off. Continue using the ointment and when the parts begin to heal apply lightly to keep the water out. For old sores, abscesses, etc., wash out thoroughly with warm water then dry and apply the ointment. Use no soap.





Watkins Germicide Dip and Disinfectant

WHAT IT IS COMPOSED OF AND HOW IT CAN BE BE APPLIED OR USED IN COMBATING DISEASES THAT ARE COMMON TO THE AVERAGE FARM AND HOUSEHOLD.

OUR manual would not be complete without devoting a whole section to the prevention of disease. This problem is receiving the attention of the whole scientific world and we seldom pick up a paper, pamphlet, book or other literature that does not deal to some extent with this subject. We hear it discussed in the home, on the street, in the shop, in the church and, in fact, nearly every public gathering.

What has brought about such a condition, why are the nation, state, local governments and scientists spending millions annually in combating preventable disease? The answer can be given in one word—EDUCATION. The scientist long ago learned that it was cheaper to prevent disease than to try to cure, but we as a whole, were slow in accepting this statement. Today, however, we are learning that prevention is the proper way to combat disease and the J. R. Watkins Medical Company have been in the foremost ranks for over forty years in teaching this doctrine throughout the country.

We do not claim to be the first in the field in the manufacture of Stock Dip. While others were flooding the market with dips and making extravagant claims for their products, we were testing our preparation in the laboratory and on animals in order to bring it up to The J. R. Watkins Medical Company's standard.

Prepared in the Best and Most Modern Equipped Laboratory—The Use of Only the Highest Grade Materials—The Finished preparations Practically Perfect and Uniform in Strength and Quality—A Better or More Economical Product Simply Can't be Made or We Would Make It.

The name Watkins Germicide, Dip and Disinfectant does not adequately convey the proper meaning or the good qualities of this preparation. It would indeed be hard to give this product a proprietary or coined name that would cover its use intelligently.

When used as a Stock Dip there is none superior on the market.

It can be used as a germ destroyer in more ways than any product we know of today. As a disinfectant and preventative of disease its uses are unlimited. It is inexpensive and easy to apply; it is safe and sure (non-caustic even at full strength) and non-poisonous when used according to the printed directions on every package whether applied to animal or man.

You probably have seen many names and coined words attached to different kinds of live-stock dips and the question naturally arises, what is it composed of, how is it made, and what is the meaning of the name?

We are going to answer these questions in connection with Watkins Germicide, Dip and Disinfectant.

First, it is composed of Coal Tar Hydrocarbons, Coal Tar Phenols, Soda, Resin, Water, Pyridin, etc.

The active principle of a product of this kind is in the Phenols which are here found in the largest practical strength. In antiseptic and germicidal strength Watkins Germicide, Dip and Disinfectant is about five times as powerful as carbolic acid.

HYDROCARBONS: In chemistry a compound of carbon and hydrogen. They occur in nature in a free state; for example, natural gas, petroleum and paraffine are entirely composed of such bodies. Other natural sources are India-rubber, turpentine and certain essential oils. The artificial sources are more productive and yield many liquid and solid hydrocarbons which are of a high medicinal and industrial value. In the destructive or dry distillation of coal, there is obtained ordinary lighting gas, composed of gaseous hydrocarbons and coal tar, which on further fractional distillations yields the articles of commerce. Coal-tar is a black, viscus, sometimes semi-solid fluid of a peculiar smell, in its crude state. Large quantities are employed for various purposes, as fuel under boilers, painting wood, iron, brick-work, as a preventive against the influence of weather, and the corrosive action of chemicals. Large quantities are also used in the manufacture of roofing-felt that is so largely used at the present time.

HOW PHENOLS ARE OBTAINED.

Coal-Tar distillation ranks high among the more important industries at the present time. From coal-tar the chemist extracts numerous useful articles and medicinal preparations and the list is by no means exhausted for in many products there still remain inert hydrocarbons that will yield up many useful articles in the future.

We feel, however, that you will only be interested in knowing how the second ingredients in our formula is obtained for it is upon the phenols that the quantity and quality of all Stock Dips of this kind hinge.

The phenols are obtained from coal-tar by what is known as fractional distillation, which means that each mass of coal-tar is placed in the finest distilling retorts, heated to extremely high temperatures, and each successive heating and treating by different chemical agents, will give up portions of fractions of the original mass.

The first and second treatings usually result in two products that are known in the trade as hard and soft pitch which resembles pine tar pitch and creosote, by further distillation and chemical agents, which must be conducted in the most accurate scientific manner, in order to obtain the phenols in their purest form possible. The crude creosote oil contains many ingredients. For example: Crude carbolic acid that is very corrosive and this must be distilled out, in order to make an ideal dip or preparation which will be non-corrosive, and still be a powerful germicide.

The soda and resin are added to the Hydrocarbons and Phenols of this formula for their stimulating qualities and to make the preparation more soluble in water at the different dilutions recommended.

The inerts, water, pyridin and other volatile bases contained in coal-tar oils, do not add to or detract from the quality of the preparation.

DIP.

In recapitulating our formula into still plainer terms, it can be said to contain the best Hydrocarbon Oils and Phenols for the destruction of germ life, combined with the best soda and resin for their emulsifying and stimulating qualities, that chemists and money can produce.

Our object in describing the component parts of this formula into plain language, in so far as it is possible, when dealing with chemistry are for two reasons. First We feel that the progressive and up-to-date stock raiser wants to know more about the different preparations used in dipping live-stock. Second: It is the policy of The J. R. Watkins Medical Company to supply the necessary information regarding their preparations to the live stock raiser, in order that he may guard against the unreliable and inferior types.

We do not fear our competitors by following this policy for we have the confidence of over three million satisfied customers throughout this country and Canada. We feel that by publishing our formulas, we are safeguarding the interests of our present and prospective customers.

The problem of dispensing medical preparations does not differ from any other article of trade, with the exception that the question of life and death are involved to a greater extent. When you buy merchandise, you go to a merchant that is reliable, the one that gives the best value, quality and price; at times we may buy a cheaper grade of clothing or shoes but we have yet to find the person who will knowingly buy a cheap medicine.

We hear a good deal about the high cost of living at the present time, that the middleman is getting the largest portion of the profits; that the farmer does not get enough for his produce and that the final consumer is paying too much for the necessities of life. The J. R. Watkins Medical Company were the pioneers in the movement of selling direct to the consumer, and cutting out the middleman's profit for we realized that in order to dispense the best medical preparations at a reasonable profit, it would be necessary to eliminate the middleman and give to the consumer the benefit of a high grade article.

GERMICIDE, DIP AND DISINFECTANT.

We have digressed somewhat from our subject but these problems are here to be solved and are worthy of consideration at any time or place.

We have told you in the preceding pages that the name Watkins Germicide, Dip and Disinfectant does not cover this preparation adequately or intelligently.

We take it for granted that all progressive stock raisers are interested in the prevention of disease among their live-stock and before we enter upon the discussion of dips, dipping and the prevention of diseases, we want you to get the three following propositions firmly fixed in your mind.

First: That we do not hesitate in accepting as legal tender a U. S. Gold Certificate that promises to pay the bearer in gold, upon demand.

That we do not hesitate in accepting a bank draft.

That we do not hesitate in accepting a check from a reliable firm or business concern. These are accepted customs based upon confidence.

Second: That you are interested in the prevention of infectious and contagious diseases among your live-stock.

That you are interested in preparations that will prevent these annual losses to the live stock raiser of the country that amount to millions of dollars annually.

That you are looking for a preparation that contains the combined qualities of being a **POWERFUL DISINFECTANT: A COMBINATION OF CRESO-PHENOLS** obtained from coal-tar, that will quickly destroy low forms of germ life.

That is a **Germicide, Parasiticide and Antiseptic** combined for general use. A product that is deadly for germs and, at the same time, harmless to higher animal life, that is inexpensive, inoffensive and easy to apply.

Third: That the name Watkins upon a check or contract is accepted as legal tender throughout the business world.

That the name Watkins upon our medical preparations means more than legal tender to our customers, or in other words we mean that every dollar expended for our preparations, must yield the customer dollars in return.

PARASITES.

The problem of the destruction of parasites both externally and internally is not an easy one. We are told on excellent authority that parasites are causing this country several hundred millions of loss annually.

It is a difficult matter to generalize in figures, as they appear empty and meaningless to the average reader. We are all aware, however, of the presence of parasites in our every day life, whether it be upon the farm or the crowded city.

Every stock raiser is familiar with lice among his live stock especially in the spring of the year and the quarantine cards tacked upon city homes are a familiar sight. This must bring to the minds of all very forcibly that there are parasites both large and small, which are the agents for propagating disease and destruction, not only of human energy and vitality but of life as well.

This thought can also be applied to the monetary side of the live stock industry due to losses through weak, stunted or undeveloped animals.

What are you going to do about these parasites, are you going to keep them with you and allow them to steal your profits or are you going to wage war upon them?

We feel that the question of dipping has never been brought before the stock raiser in quite the proper light. It is just as necessary to go about the destruction of parasites at certain seasons of the year as it is to plant grain.

Every farmer works along certain general lines, in that he plants, reaps, and stores away in the fall the fruits of his labor; he also provides suitable shelter for his animals and feeds them the grain that are the results of the season. It

has been said of the sturdy Pennsylvania farmer that he always provided better shelter for his stock than for his family. This custom, however, seems to have spread throughout the country, based on the fact that animals properly sheltered require less grain and this means a larger gain in profits.

Every farming community is visited with some type of contagious or infectious disease annually, and lice are present in all communities.

Why not meet these conditions with a proper agent for their destruction and prevention?

First: By having on hand a preparation that will cause the most destruction to these plagues.

Second: The proper agents for the application of the remedy, whether it be a hand brush, broom, spray pump, a simply constructed hog wallow, a small dipping plant for 50 to 100 animals or a large dipping plant for thousands of animals.

The modern farmer would not consider for a moment the harvesting of grain with a sickle. If he cannot own a modern reaper, he combines his money with that of a neighbor in order that both may be benefitted by the transaction. The same is true of the dipping problem, and it is a matter of community interest to prevent outbreaks of disease but whether you agree or not to the necessity of individual or community dipping plants, you will agree that a lousy colt or a mangy animal of any kind requires attention if you expect it to thrive.

It has always been a matter of speculation with us to know how often the average stock raiser realizes, (in the spring of the year when he observes a fine bred colt that is teeming with lice that are literally eating it alive) the absolute necessity of killing the lice, also what will be the most effective remedy and how can it be applied.

You can kill lice on an individual horse, cow, sheep, hog, colt, calf, lamb, etc., or more, by what we call hand dressing. This can be accomplished by the application of one part Watkins Germicide, Dip and Disinfectant to forty or fifty parts of warm water, applied with a brush, broom or spray pump. While hand dressing can be successfully carried out on small herds, we believe that the dipping vat is the only solution for the proper destruction of external parasites on farm animals.

CAN BE USED WITH SPRAYING PUMP.

Hand-dressing as the term implies, is the application of some agent by the aid of a hand brush, broom or spray pump. This method possesses some advantages in that it can be done at any season of the year, particularly during the cold weather when it is not practicable to use a dipping tank or in handling pregnant sows or ewes that are likely to be injured in going through a dipping tank.

In some cases where stockmen do not have a dipping tank large enough to dip horses and cattle, hand-dressing if carefully carried out, is the best way to



Convenient Method of Holding Nozzle in Spraying.

kill parasites and lice and to treat skin diseases under the above named conditions.

Mix Watkins Germicide, Dip and Disinfectant with warm water making the solution stronger than for dipping, say 1 to 40, or 1 to 50, and spray or sprinkle it over cattle, horses, hogs, sheep and calves. If you use a sprayer be sure that you spray against the hair so that the solution will get down to the skin. If you use a sprinkling can, take a broom or stiff brush and scrub the solution well into the hair.



Hand-dressing the Hog.

dip is poured on the skin along the back it will incline to leave the skin and be conducted into the wool. Repeat this treatment in six or ten days (not over ten days) to kill development of eggs, which are not killed from the first hand-dressing.

DIPPING AND DIPPING APPLIANCES.

Like all other progressive ideas, the advantage must be apparent before the average person will adopt them, and we predict that the time is not far distant when the stock raiser will find that dipping appliances are as necessary on the farm as plows, mowers, binders, etc.

Of the numerous dipping plants there are probably four that might be considered practicable for the average stock raiser.

First, the small dipping tank, with cage for lowering animals into the dip.

Second, a small or medium-sized plant with swimming tank.

Third, the practical hog wallow or shallow tank.

Fourth, the large dipping plant with swimming tank, such as will be needed if large numbers of range animals are to be treated.

The first two types mentioned above are the most advantageous for the individual stock raiser, or for community purposes where the herds range from 75 to 150 head, owing to the fact that the small cage type can be used quite as successfully for all animals, both large and small, by the use of two different size cages as shown in the illustration. The smaller swimming tank for the smaller animals on the farm is a very useful and paying proposition. The smaller types of swimming tanks for all sizes of animals are very popular in some localities. Other advantages in favor of the smaller tanks are, they cost less to build, smaller operating expenses, ability to keep the dip at the temperature recommended because of its lesser volume.

We believe that if you will study the illustrations of the cage vat type you will find it has several advantages; one is, you will be in a position to dip all of your live-stock in the same tank. One especial advantage over all other types is that you can handle pregnant animals very easily if a little care and judgment are exercised.

The practical hog wallow is becoming very popular among hog-raisers and is considered a valuable adjunct to the different dipping appliances. Hog-raisers find this an inexpensive, easy and sure way to keep them clean and thrifty. It is surprising how soon the hogs learn the value of the wallow as it frees them from lice, keeps the flies away and gives them comfort during the summer months. If you don't give a hog a clean place to wallow it will find a dirty one.

The building of these different appliances does not require skilled mechanics and any stock raiser that is handy with tools can build one of wood or cement, with very little cost for the materials. There are many types of steel tanks on

the market, that are light, strong and tight, that can be easily moved at any time.

The matter of choosing any particular type of dipping tank must necessarily rest with each individual stock raiser as he is in a better position to judge what may be best suited to his own particular conditions and surroundings.

THE SELECTION OF A DIPPING AGENT.

The use of some kind of a germ destroyer and disinfectant in dipping tanks, stables, pens, kennels, etc., in fact every place where disease germs lurk or dirt accumulates, has become so general that they are now considered indispensable to proper sanitation and to the prevention of diseases to man or beast.

Such a product must be an unfailing remedy for lice, mange, itch, ticks and other parasites on horses, cattle, sheep, swine and poultry.

It must be a prevention in disease conditions like hog cholera, chicken cholera, roup, contagious abortion, distemper and other infectious diseases.

It must have non-poisonous properties which make it safe in the hands of the stock raiser, and yet its effectiveness must equal or surpass the parasitical properties of all such remedies as arsenic, corrosive sublimate and carbolic acid, which are attended with danger and accident in their application.

These questions rest with you then: "Shall I purchase and keep on hand at all times a germ destroyer and disinfectant, and where can I secure the very best on the market, and assure myself that I have not been imposed upon by unscrupulous manufacturers and dealers with a cheap, inferior and worthless article."

If you would be absolutely certain of the grade and quality of your germicide and disinfectant, buy an article that is manufactured and guaranteed under the name of The J. R. Watkins Medical Company.

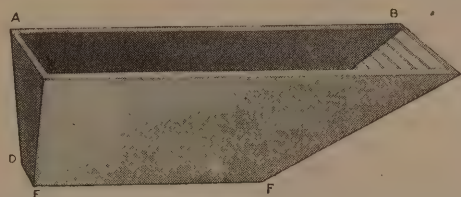
All cans and other receptacles are plainly labeled Watkins Germicide, Dip and Disinfectant. Do not take a substitute.

HOW TO MEASURE A DIPPING TANK.

Before filling the dipping tank it is absolutely necessary to know how much it will hold in order to get the proper dilution.

It doesn't do to guess at anything so important as this. You must be accurate if you expect to get proper results.

It is not a difficult matter to figure out the dimensions of a tank if you follow carefully the directions here given but if you are puzzled, send us the measurements of your tank and we will gladly figure it out for you. Make a drawing and mark measurements along the lines of the illustration.



Most dipping tanks are shaped like this diagram and the directions are given for this kind of a tank.

First: Measure length at top, A to B, and length at bottom, E to F, in inches. Add these numbers together and divide by 2, to get the average length.

Second. Measure width at top, A to C, and width at bottom, D to E, in inches. Add these two numbers and divide by 2, to get the average width.

Third. Measure from the bottom of the tank up along the side, E to C. Make this measurement in inches.

Now multiply the first number by the second and then multiply this result by the third.

Divide the last result obtained by 231, and this will give you the number of gallons the tank will hold.

For example: Suppose your tank is 72 inches long at top and 48 inches long at bottom— $72 + 48 = 120$, $120 \div 2 = 60$, average length.

And suppose it is 26 inches wide at top and 10 inches wide at bottom— $26 + 10 = 36$, $36 \div 2 = 18$, average width.

If the tank is 48 inches deep, the depth of the solution will be nearly 48 inches.

Multiply the first number by the second— $60 \times 18 = 1080$.

Multiply this result by 48— $1080 \times 48 = 51,840$.

Dividing by 231— $51,840 \div 231 = 224$, number of gallons the tank will hold.

The result shows that such a tank will hold 224 gallons of water. Now, the next thing to know is—how many gallons of Watkins Germicide, Dip and Disinfectant will it take for that amount of water?

If you are going to use it 1 to 65 as for scab in sheep (see page 55) divide the number of gallons your tank holds by 65, thus— $224 \div 65 = 4$, nearly number of gallons of Watkins Germicide, Dip and Disinfectant required.

If you want to make the solution 1 to 75, as for mange in hogs (see page 63) divide by 75 instead of 65, thus: $236 \div 75 = 3$ nearly number of gallons of Watkins Germicide, Dip and Disinfectant required.

Whenever more solution is added to replace that carried out by the animals, the proportions should be kept up.

After you have finished dipping take the solution remaining in the tank and use it as disinfectant about the yards, pens, stables, etc.

TABLES FOR MAKING UP WATKINS GERMICIDE, DIP AND DISINFECTANT.

To make a 2% (1 to 50) solution use

- 1 tablespoonful of Germicide to $1\frac{1}{2}$ pints of water; or
- 1 pint of Germicide to 6 gallons of water; or
- 1 gallon of Germicide to 49 gallons of water.

To make a $1\frac{2}{3}$ % (1 to 60) solution use

- 1 tablespoonful of Germicide to 2 pints of water; or
- 1 pint of Germicide to $7\frac{1}{2}$ gallons of water; or
- 1 gallon of Germicide to 59 gallons of water.

To make a $1\frac{1}{2}$ % (1 to 75) solution use

- 1 tablespoonful of Germicide to $2\frac{1}{3}$ pints of water; or
- 1 pint of Germicide to $9\frac{1}{2}$ gallons of water; or
- 1 gallon of Germicide to 74 gallons of water.

To make a 1% (1 to 100) solution use

- 1 tablespoonful of Germicide to 3 pints of water; or
- 1 pint of Germicide to 12 gallons of water; or
- 1 gallon of Germicide to 99 gallons of water.

To make a $\frac{1}{2}$ of 1% (1 to 200) solution use approximately

- $1\frac{1}{3}$ teaspoonfuls of Germicide to 1 gallon of water.

To make a $\frac{1}{3}$ of 1% (1 to 300) solution use approximately

- $\frac{3}{4}$ of a tablespoonful of Germicide to 1 gallon of water.

Dilute Watkins Germicide, Dip and Disinfectant according to directions with soft water heated to 100 degrees F., mix thoroughly, and it will make a perfect emulsion. Heat the water before adding the Germicide. Soft, heated water is better for several reasons:

First: When animals are dipped in the solution, cold water is likely to be too much of a shock.

Second: Warm water makes a more penetrating and better emulsion.

Third: Warm water tends to dissolve any oily substance on the surface being disinfected, or the hair of the animal, softens the skin, and assists the work generally.

Watkins Germicide, Dip and Disinfectant will quickly and thoroughly emulsify with ordinary water, which should be heated to 100 degrees F., but when



the water is hard, such as lime water, which is sometimes found in wells or springs, it should be softened. When water does not lather freely with common soap and the suds do not remain on it, then it is hard. To soften it before mixing dip with it follow these directions:

Dissolve in 5 quarts of water two tablespoonfuls of washing soda and $\frac{1}{4}$ lb. hard, or $\frac{3}{4}$ of a pound soft soap. Use heat to dissolve the soap and soda if necessary. This mixture may be called a Softening Fluid. About $\frac{1}{2}$ pint of it will soften 10 quarts of hard water, or $2\frac{1}{2}$ gallons will soften 100 gallons. If this fails to make a perfect emulsion, then add concentrated lye until it does mix.

RENEWING THE VITALITY OF THE DIP.

When dipping, animals take out of the dip more dip than they do water, and as the dipping progresses, the strength of the dip must be renewed. Probably the first 100 head of stock would go through the dip without its being reinforced. Then calculations must be made, allowing $\frac{1}{2}$ gallon of fluid for each animal and water and dip added to make the amount in the tank equal the original amount. Then more dip should be added in proportion, say 1 part of the Germicide to 50 parts of water. For example:

Originally 1 part of Germicide to 75 parts of water for dipping sheep affected with lice. Say 100 animals have been dipped; they take out 50 gallons of fluid. Now, add to the dip in the tank 49 gallons of water and 1 gallon of Germicide.

DECOMPOSED DIP EMULSION.

When the dip solution is in the dipping tank, after having been mixed with the water for sometime, it is useful as long as it remains in an emulsion, that is, thoroughly mixed and presenting a uniform milky color, but after a time it decomposes. When this occurs, it should not be used, because the medicinal properties are no longer in suspension and would not be distributed upon the animal as intended when dipping. Dip solution decomposes by use, from the excreta of animals, evaporation of water and the destruction of the emulsifying agents. It shows separation, and when this occurs, it should not be used. The dip mixture generally will keep for two or three weeks, according to the exposure to the action of the sun, etc.

ADVICE AND DON'TS IN DIPPING.

Remember that it is just as important to do thorough work with the last animals dipped as with the first ones.

In making a dipping solution the measures of dip and water should not be guessed at. Study the table of dilutions and use Watkins Germicide, Dip and Disinfectant according to directions. See that it is thoroughly mixed until the emulsion gives a uniform color when stirred.

Remember that a dirty, filthy tank decomposes the solution. Clean out the accumulated filth whenever necessary.

See that all animals are given an opportunity to drink all the water they want before dipping, as in cases of extreme thirst it is only natural that they will drink the dip and while it may not harm the animal, it is better that they should not do this and certainly cheaper for you.

Select good weather for dipping, be particular to avoid wet or rainy weather and do not dip late in the afternoon when the nights are chilly.

Avoid putting heated animals into a cold dip. It is always better to have the solution heated to about 100 to 105 degrees F. or at least luke warm. There are many appliances on the average farm for heating the dipping solution, in the way of steam boilers, steam cookers, or large kettles in which a portion of the dip can be heated and blended into the colder solution, by the aid of an ordinary dairy thermometer.

Don't fail to dip a second time inside of ten days to kill the parasites that have hatched out since the first dipping for you can readily understand that any dipping solution that would be strong enough to kill the un-hatched eggs or nits would seriously harm your live stock.

Remember that it is important to dip all animals, for if you leave any strays behind, don't be surprised if the whole flock is soon as bad as ever. Dip all except pregnant sows and ewes.

These should be separated from the other stock as directed. If you are using the cage tank for dipping, there is practically no danger in dipping pregnant sows and ewes, where care and judgment are exercised in not crowding them or handling roughly through the tank.

In order to get the best results, don't rush the stock through the tank. Keep each one in at least a minute or more, depending on the condition of the animal. Don't guess at the time, use your watch. Push each animal under, head and all, at least once as it goes through. Take into consideration the condition of the animals, the time of the year and its influence on the thickness of the coat.

In the fall, when the coat is thick and heavy, more care in dipping is necessary than in the spring after shearing or when the animals are shedding. There are certain breeds of animals on which the hair naturally grows much thicker and the hide much tougher than on others. Take all of these points into consideration.

Further, when the animal is in the tank the back is not as completely immersed in the dip as the balance of the body.

Along this line is where the mange, mites, lice, etc., are more numerous than any other places. Consequently, careful attention should be given to see that the animals are thoroughly immersed.

It is a good plan to have a stiff brush fastened to the end of a pole, and as the animal passes through the vat give the back a thorough scrubbing. In cases of scabies where large scabs have formed, break them up with a curry-comb or stiff brush to give the dip a chance to penetrate and cure.

Don't give young lambs, colts, calves, etc., the same treatment you do full-grown stock. Our directions are for adult animals (except when otherwise



Dipping Plant with Cage and Derrick.

specified and should be modified when applied to young stock according to age.

CAGE DIPPING PLANT.

Derrick 16 ft. high above ground. Derrick posts 4 ft. in ground, 6 by 6 in by 20 ft. long. Braces 4 by 4 in by 10 ft. long; 2 double-leaf 6-in. blocks at top of derrick, and 1-leaf 5-in. pulley at top of derrick under crosshead: 100 ft. of 1-in. rope.

Entrance pen and chute.

65 planks 1 inches x 6 inches x 16 ft. 28 posts.

18 braces 4 in. x 4 in. x 4 ft.

The cage tank cut is from Farmers' Bulletin No. 152. The dimensions however, are greater than necessary, and require too much dip to charge the tank. Vats of the following dimensions are successfully used on all sized animals.

Length of tank ----- 8 ft.

Width ----- 3½ ft.

Depth ----- 7½ ft.

Cage measurement inside.

Length ----- 7 ft. 10 in.

Width ----- 2½ ft.

Depth ----- 7 ft.

For the average farmer, there are further advantages by having two that such a cage be made in addition,

cages, one for the smaller animals with sides of the cage and we would suggest in order to see the advantages.

NOTES ON BUILDING DIPPING VAT.

Vat to be built of 2-inch tongued and grooved boards, or 1-inch tongued and grooved flooring, doubled, with tar paper between, and joints broken; all joints made tight with white lead or by calking.

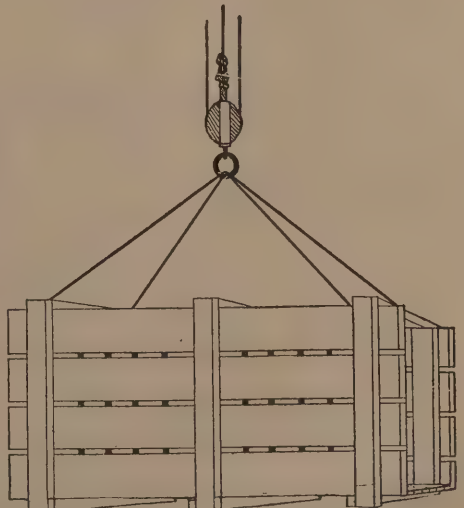
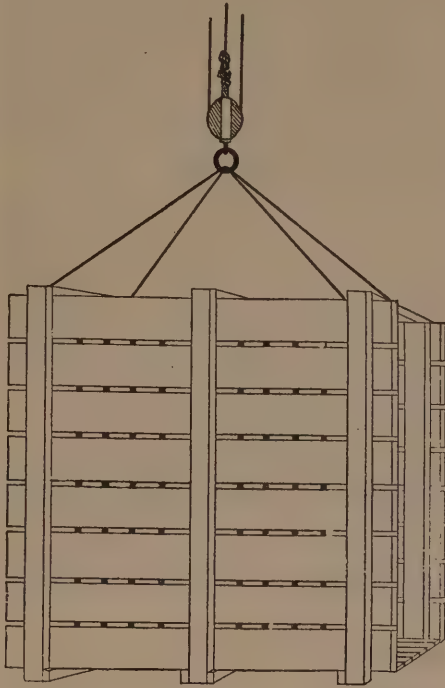
WHEN TO DIP.

It is a paying proposition to dip all animals at least once a year, particularly in the fall in order to have them free from parasites during the winter and spring months.

If your animals become affected with lice, scab, ticks, etc., don't be afraid to dip at any time except in extreme cold weather.

During the winter months if you are troubled with these parasites it is not a difficult task to hand-dress fifteen or twenty animals, inside of good shelter. It means money to you and comfort to the stock.

Don't overlook the necessity of dipping hogs as often as possible during the summer months, every two or three weeks is not too often. There is no better way of preventing cholera and other infectious diseases and



keeping them healthy and thrifty than by frequent dipping in Watkins Germicide, Dip and Disinfectant.

Also don't overlook the possibilities of the practical hog-wallow. For an actual cash outlay of less than five dollars you can build one, as illustrated, and let the "mortgage raisers" free themselves from grain thieves like lice, mites, ticks, fleas, etc., by dipping themselves. In hog-wallows use $\frac{1}{2}$ gallon of Watkins Germicide, Dip and Disinfectant to 300 gallons of water.

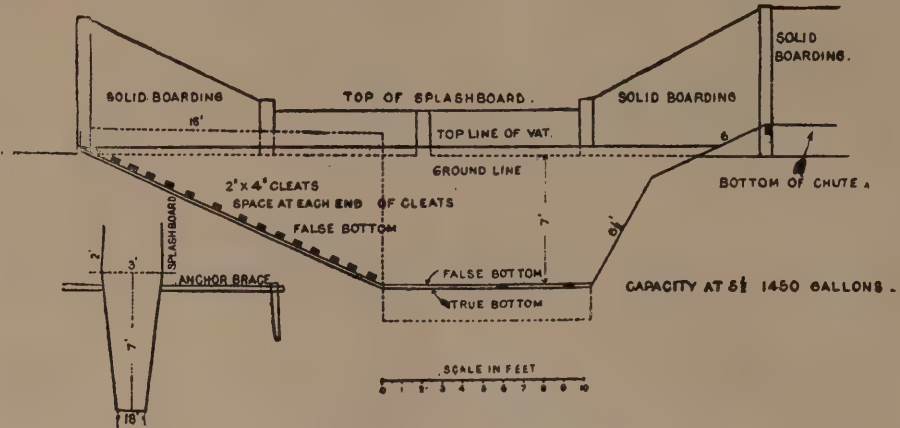


FIG. 14.—Small or medium-sized dipping tank.

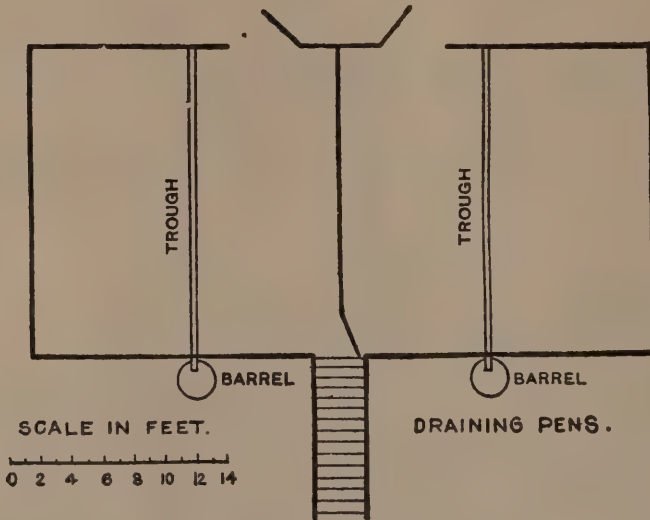


FIG. 15.—Draining pens.



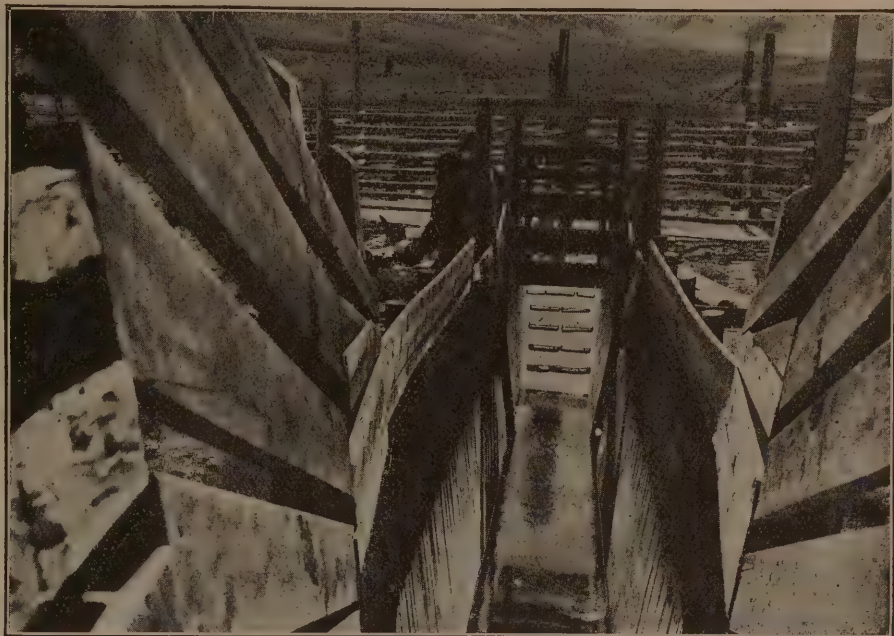
FIG. 16.—Crook for handling cattle in vat.



FIG. 17.—Crotch for ducking cattle.

Swimming Tank.

Showing a small-sized swimming tank that can be constructed of sheet metal, concrete or lumber at a small cost, which is self explanatory.



Concrete horse and cattle dipping vat, showing "soaking gate" raised. This vat may be transformed into a sheep vat by running a wooden partition the length of the vat. The cleats at the far end are made of wagon tires.

SHEEP.

SCAB: This is one of the most troublesome, contagious diseases that the sheep-grower has to contend with. It has caused more loss to the sheep owner than any other disease. There are two kinds, known as Head Scab (*Sarcoptes scabies*) and Common Scab (*Psoroptes Communis*), but conditions, symptoms and treatment are applicable to both forms.

If you have never had sheep scab in your flock, you are to be congratulated but do not allow this fact to keep you from being constantly on the lookout for it.

The cause of scab is a small parasite (called the scab mite) this is difficult to see without the aid of a magnifying glass.

These parasites burrow under the skin and cause an itching that seems almost impossible to endure by the animals. In biting and rubbing, the skin is broken, and a watery serum collects, and this dries, forming crusts, hence the name "Scab."

Common Scab Mite of Sheep
(*Psoroptes Communis Ovis*)
Enlarged.

SYMPTOMS: There is seldom any trouble in diagnosing this complaint. The scab mites have the habit of living together in colonies. It usually appears first on the shoulder, neck or side.

At first there is merely a pale, moist spot on the skin that lacks the healthy color of the surrounding surface. The presence of the mites causes itching,

and the sheep begins to pull out the wool from the infested spot with its teeth. As the mites increase in number, the serum becomes more abundant, and on drying forms thick scabs.

TREATMENT: Dip the entire flock in 1 part of Watkins Germicide, Dip and Disinfectant to 65 of water. Do not delay, for in this way, you simply give the trouble a chance to increase. Follow directions carefully regarding dipping since this is the most satisfactory treatment for all except pregnant ewes and these should be hand-dressed with a stronger solution than for dipping, 1 part of the Germicide to 40 or 50 of water. If too cold for dipping the hand-dressing is a good substitute for the infected sheep using the same strength dip as given above.

DIRECTIONS FOR DIPPING SHEEP.

Before you fill the dipping tank, you must know how much it will hold. The average amount of dip used in a sheep dipping vat is from 38 to 42 inches in depth. Refer to page fifty-five (55) for directions as to how a vat is measured and the amount of dip necessary to obtain that depth in order that the required amount of dip will be prepared.

Time, Temperature, Etc.

Sheep should be kept in the dip from one to two minutes by the watch. Don't guess at it. Their heads must be submerged at least once but only for an instant and the best time to duck the head is just before they go up the incline to leave the vat. The dip should be maintained at a temperature between 100 and 105 F. while the sheep are in it. The dip must be changed as soon as it becomes filthy.

It is advisable to sort out from the flock the sheep that have a hard dry scab and hand-dress the scabby spots with some of the dip by rubbing with a smooth stick or brush, so as to moisten and soften the scab but not severely enough to draw blood, as the blood will protect the microbes from the effect of the dip. Allow these to stand from 40 minutes to an hour after hand-dressing before putting them in the dipping vat.

If the band of sheep is affected with scab a second dipping is imperative. This should be done at an interval of not longer than from 10 to 14 days from the time of the first one, in order to kill any mites hatched from eggs not killed from the first dipping. Where owners are introducing new sheep into their band that may have been exposed to the disease one dipping is usually sufficient. As a rule the dip will penetrate the fleece of a lamb quicker than that of a full grown sheep in full fleece. For this reason they should not be put into the dipping vat together, the grown sheep requiring more time on account of the gum in the fleece.

Watkins Germicide, Dip and Disinfectant does not harm the fleece as lime and sulphur does, neither does it stain and sicken as is the case with tobacco.

LICE. These parasites are frequently found on sheep. They are small insects about one-twenty-fifth of an inch in length; the general color is white with the exception of the head, which is reddish brown. They are often found in large numbers associated with scab. Their favorite locations appear to be the inner part of the thigh and the sides of the neck.

Lice on sheep cause much irritation and discomfort. The skin becomes rough and hardened (from rubbing,) and covered with dry, blackened scales, the wool becoming dry, brittle and lifeless, giving the sheep a very unthrifty appearance. Sheep will rub against posts and other objects and nibble at their flanks, frequently scratching the elbows with the hind feet. When they lie in the sun the parasites move to the outside of the fleece where they can easily be seen.

TREATMENT: Use Watkins Germicide, Dip and Disinfectant, 1 part to 75 parts of water.

SHEEP TICK: (*Melophagus ovinus*.) This is a common parasite of sheep and although not so destructive as scab, yet it produces sufficient damage to warrant the careful attention of every sheep-owner.

The sheep tick is about one-quarter of an inch long and the body is short, broad and tough. It is of a grayish brown color, irregularly mottled.

These parasites increase rapidly and one sheep infected with ticks will soon scatter them through the whole flock.

SYMPTOMS. There is seldom any trouble in diagnosing this complaint and the severity of the symptoms depends largely on the number of ticks infesting the sheep.

While a few will cause the animal trifling annoyance, heavier infestations cause intense irritation which greatly interferes with the well being of the sheep. Lambs, owing to their tender skin, suffer from these pests, especially after the older sheep are shorn, as the ticks leave the sheep and take shelter in the wool of the lamb.

TREATMENT: The best method is to dip the whole flock, and the best time to dip for ticks is directly after shearing. One thorough dipping with 1 part of Watkins Germicide, Dip and Disinfectant to 75 parts of water will destroy all live ticks, but as some pupa are sure to be left in the wool of the lambs, it is a good policy to repeat the dipping in two or three weeks as directed under sheep scab.

The prevention and spread of all parasitic trouble might often be avoided if sheep owners would take the necessary precaution to dip all new sheep before bringing into their flock.

MAGGOTS: During the hot weather the common blow-fly deposits its eggs on sores or on damp, dirty wool, usually on the hind quarters of the sheep. The larvae formed soon hatch into grubs, which quickly work their way into the skin, which causes great suffering and may result in the death of the animal if neglected.

TREATMENT: Cut away the wool, cleanse the affected part and apply 1 part of Watkins Germicide, Dip and Disinfectant to 25 parts of water. Continue with daily applications by gradually diluting the Germicide to 1 in 50 until the affected parts are healed.

FOOT ROT IN SHEEP. A chronic inflammation of the foot, marked by ulceration, softening of the hoof, lameness and the discharge of a sticky material which has a disagreeable odor. It is a contagious disease, and is produced by a germ (*Bacillus necrophorus*) that lives in the soil and gains entrance to the feet through wounds and surfaces chafed by barbed grasses and stones, or by gritty clay, which becomes lodged between the toes and hardens there. It is generally confined to sheep that are pastured in low wet places.

TREATMENT: Remove to higher and drier pasture if possible, remove the diseased portion of the hoof, shorten long feet, but do not cut deep enough to make the feet bleed. Allow the sheep to stand in a solution of one part of Watkins Germicide, Dip and Disinfectant to 25 parts of water. Repeat daily until cured, or after the first treatment pack the hoof with an ointment made of equal parts of the Germicide, Flour of Sulphur, and Pine Tar.

SORE MOUTH. This disorder is denoted by eruptions that appear to be of a germ origin, that affect first the mucous membrane of the mouth, and later, if not checked, extending throughout the entire intestinal canal.

TREATMENT: Cleanse the sore mouth daily by washing with 1 part of Watkins Germicide, Dip and Disinfectant to 75 of water. Whenever possible supply the animals that are being treated with soft succulent food.

STOMACH WORMS (Twisted Stomach Worms, Etc.) The destruction of internal parasites or worms is receiving more attention today than ever before owing to the rapidity in which they have been spreading throughout the country, especially in sheep which are compelled to graze over the same feeding grounds.



SHEEP TICK (*Melophagus Ovinus*.)

When worms are found to be prevalent among a band of sheep the owner should not delay in beginning a course of treatment and following it up until the pests have been exterminated. Even after a flock of sheep are apparently free from worms an occasional dosing will be found beneficial as a preventative as well as to clean out any chance infections that may have occurred.

SYMPTOMS: The first symptom usually noticed is that the sheep do not seem to "do well." They may not appear thin, but when lifted are found to be light. When the flock is driven those worse affected will lag behind and quickly tire out. The skin of wormy sheep instead of having the natural pink color will appear bluish-white.

TREATMENT: Let the sheep go without food for 16 or 18 hours and then drench with the following solution 2 tablespoonfuls of Watkins Germicide, Dip and Disinfectant to 6 pints of water. In drenching a sheep set it upright, as in that position there is less danger of strangulation. The doses of this mixture are recommended as follows:

Lambs 5 to 10 months old -----	3 to 5 ounces.
Yearling sheep and above -----	5 to 8 ounces.

Repeat the dose (except with very weak animals) the following day, starving beforehand, as in the first dose. Two treatments are usually sufficient, but if necessary give a third.

Various other remedies have been proposed for stomach worms, but most of them have the objection of being either expensive or dangerous.

Watkins Germicide, Dip and Disinfectant is free from these drawbacks. It is so inexpensive that a whole herd may be dosed at a trifling cost. It is practically non-poisonous when used as directed, and is very effective in destroying the parasites.

CATTLE.

KNOWLEDGE of the more common ailments of cattle, their origin and mode of spreading, also their prevention and means of relief, are indispensable to the successful stock raiser. If your cattle are troubled with lice, mange, warbles, calf cholera and other disorders, try the treatment advised on the following pages. If you want more information upon a particular disease, or if you are unable to determine just what disease is affecting your cattle write our Veterinary Service Department.

MANGE. (Sometimes called Scabies, Cattle Itch, Spanish Itch, Etc.) Mange is caused by a minute mite that lives upon the surface of the skin and causes extreme irritation by burrowing into it. There are two varieties of this disease, one known as common mange (*Psoroptes communis bovis*) and another known as symbiotic or tail mange, but since both yield to the same treatment they may be considered under the same head. It is seldom that a case of sarcoptic or deep-seated mange is found in cattle.

SYMPTOMS: It is scarcely necessary to go into detail regarding the symptoms of this condition. As in all cases of scab, whether sheep, cattle, horses or hogs, the most noticeable symptom is an intense itching. In the early stages the itching of the skin in the region of the neck or shoulders is first noticed. This is indicated by the animals digging at the skin with the horns, or the constant rubbing against posts, fences, or anything that may give relief at the time.

The disease gradually spreads along the back, sides and outside of legs. In the early stages the coat looks rough, the skin has a scurvy appearance. In time, the hair comes off or is rubbed off, presenting bald patches of thick, glazed and wrinkled skin.

After the hair comes off the parasites leave these regions, seeking other quarters and the hair



SCAB MITE.

to some extent grows in again. There is a dejected and debilitated condition in the affected animals and they fail rapidly in flesh. Their appetites are poor and most of their time is expended in scratching themselves.

Mange spreads rapidly through a bunch of cattle.

The disease is most common and disastrous during the winter season, when the weakened and debilitated animals fall easy victims to the cold. One affected animal will soon spread the disease to others, both by coming in contact with them and by scratching the parasites upon posts, fences, walls, etc., from which places they find their way to healthy animals. For these reasons all such places must receive attention in order to stamp out the disease.

TREATMENT: When a large number of cattle are affected, dipping is the best course to pursue. Conditions vary and the owner will have to be the judge of what can be successfully undertaken.

The same general directions regarding temperature, strength of dip, etc., should be carried out as directed under sheep by using 1 part of Watkins Germicide, Dip and Disinfectant to 70 or 75 parts of water.

Break up the scabs with a brush or currycomb before dipping. After 8 or 10 days repeat treatment in order to kill any newly-hatched parasites. If not convenient to dip, hand-dressing should be resorted to as the next best thing. In hand-dressing remember to make the solution stronger than for dipping by using 1 part of the Germicide to 40 or 60 parts of water. In any event be thorough in the work for it is simply a waste of time and money to do otherwise. The dip that remains should be utilized in disinfecting fences, walls, chutes, posts, feed racks, etc., to kill parasites rubbed off on these places by many animals and thus prevent reinfection. This can be done with a sprayer or sprinkling can. Old infected bedding should be burned for this cannot be disinfected.

LICE. These parasites cause a great deal of annoyance to farm stock, inasmuch as they bite the skin, suck out the blood and cause considerable irritation. They are more common in the spring and fall and calves and young cattle are usually the victims. Unless relief is given they are likely to stunt the animal or at least to seriously interfere with its fattening for market.

TREATMENT: The red and blue cattle lice are easily killed by Watkins Germicide, Dip and Disinfectant, 1 part to 60 or 75 of water. Dip again in 8 or 10 days to kill the lice that have hatched out since the first dipping. Hand-dressing will effect the same purpose if care is taken to see that the solution is thoroughly scrubbed into the skin. Particular attention should be given to the flanks and base of the horns as these are favorite locations.

There is little doubt but that many cases of so-called mange upon cattle are really caused by lice. Make a careful examination and if you find that lice are causing the trouble, follow the above directions and you will experience no difficulty in exterminating these pests.



Blue Louse

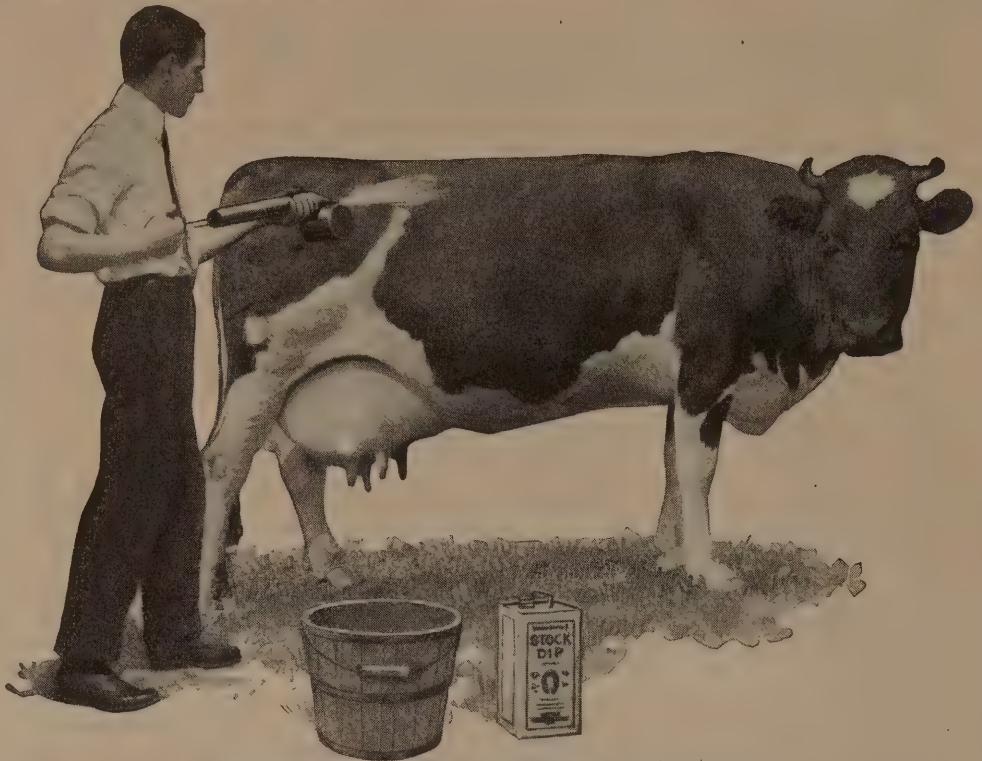


Red Louse

SCREW WORMS (Larvae of *Chrysomya macellaria*.) The screw worm represents the larval stage of the fly, which has a blue body, red front to head, and three black lines on the thorax; it lays from 300 to 400 eggs in a few moments in wounds in the skin or in the nostrils, sheath, etc.

It burrows into the flesh eating anything it can and grows rapidly for about a week. When mature it wiggles out of the wound and burrows into the ground to transform into a pupa; after nine to fourteen days longer the adult fly issues from the pupa.

Cleanse all wounds thoroughly, removing the worms with an application of 1 part Watkins Germicide, Dip and Disinfectant to 10 of water. Re-dress the wound daily until cured. The presence of the Germicide will prevent the return of the fly and reinfection.



Method of Spraying for Flies and Mosquitoes.

RING WORMS: This is common in the domestic animals, and especially in calves and young cattle. It depends upon the presence of a vegetable parasite, which develops and grows rapidly when it finds a suitable place. The outside skin is slightly inflamed, pimples form which discharge and exudate, and a scaly crust is formed. It is attended with more or less itching, and is communicable from one animal to another and also to man.

TREATMENT: Remove all crusts, by washing with soap and water. Then apply one part of Watkins Germicide, Dip and Disinfectant to 25 parts of warm water, to the affected parts every three days until cured. The stable or premises should be disinfected with one part of the Germicide to 75 parts of water to prevent reinfection.

CONTAGIOUS ABORTION: If you ever had this disease among your cows you know what a serious thing it is, and you will probably do almost anything rather than have it break out again. On the other hand, if you have never had experience with it, be warned by that of others and keep on the lookout for it. Do not put new cows with your herd until you are sure they are free from the disease. Disinfect the bull, as directed below, before and after service, especially if he is from a strange herd. This is one of the most common ways of spreading the disease. Make it a rule to use Watkins Germicide, Dip and Disinfectant freely about your stable. There is little chance for the germ to gain a foothold under these conditions.

TREATMENT: When once introduced into a herd it can only be eradicated by energetic and thorough treatment, not only of the male and female, but also of surroundings. Immediately remove all pregnant cows to healthy quarters which have been thoroughly disinfected. Remove the afterbirth of abortive cows and thoroughly douche the womb and vagina with a solution of 1 part of Watkins Germicide, Dip and Disinfectant, to 100 parts of warm water. Employ this treatment every other day, using each time about four gallons of the solution, also keep the hind quarters and tails of all animals disinfected with the same strength solution.

The bull should be thoroughly disinfected with 1 part of the Germicide to 200 of water by injections into the sheath an hour or more before and immediately after service, using about two quarts of this solution. The vagina of pregnant cows may be douched with the same amount and dilution as directed for the bull about every 4 days, as a preventive against further invasion.

All stable floors, sides of stalls and premises should be thoroughly disinfected with 1 part of the Germicide to 75 of water.

The douche can be given by using a $\frac{1}{4}$ or $\frac{1}{2}$ inch rubber tube with a tin funnel attached. Elevate the tunnel several feet above the animal under treatment, then pour the warm Germicide, Dip and Disinfectant solution into it.

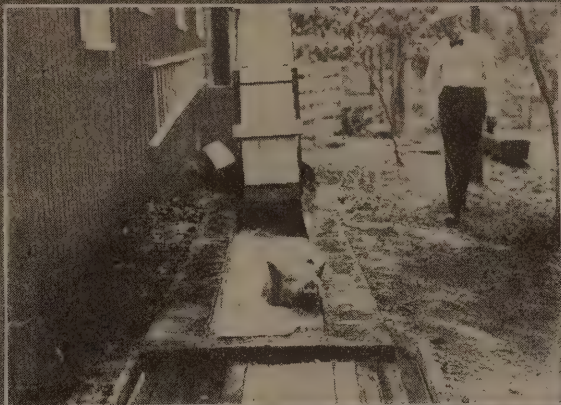
CALF CHOLERA and WHITE SCOURS.—For cause and treatment see section 6. diseases of domestic animals.)

FLIES and MOSQUITOES. The adult flies and mosquitoes which attack cattle attract our attention immediately, as they can be most easily seen. Numerous different forms come into consideration, and they injure cattle in different ways; by tormenting and worrying them, by sucking the blood and carrying disease. Many of these flies are known to stock raisers as the horn fly, buffalo gnat, turkey gnat, the gad or breeze fly, stable flies and forest flies.

By using Watkins Germicide, Dip and Disinfectant as directed you can save your cattle, especially dairy cows, an endless amount of annoyance and worry. Use 1 part of the Germicide to 75 or 100 parts of water. Spray this solution over the cattle, by carefully spraying against the hair. You will find that it will pay to repeat this application daily, especially when the weather is warm and the flies are bad. As a fly repellent, use the following mixture, which will not evaporate quite so rapidly:

- 1 part Watkins Germicide, Dip and Disinfectant.
- 1 part linseed, cotton seed or fish oil
- 14 to 18 parts of water.

Heat the mixture and add a bar or two of laundry soap, depending on the amount of mixture you wish to make, in order to make the oil and water combine more readily. Shake the mixture well before using.



Small Concrete Dipping Tank for Hogs.

Photos by Courtesy
of Universal Portland Cement Co.



HOGS.

THERE are many ways in which Watkins Germicide, Dip and Disinfectant is valuable in combating disease and in caring for hogs. Recognizing the necessity of combating the various forms of disease and bacteria, the next step to be considered is the practical use of a germicide and disinfectant. Disease producing bacteria are left by the sick animals in many places, some of which are difficult to reach by disinfecting agents. The germs are also invisible and many sources of infection escape notice, consequently the disinfection must be incomplete if not carried out in the most thorough manner.

In all contagious outbreaks in hogs, the pens, yards and troughs may become infected and must receive the closest attention or the eradication will not be complete.

HOG CHOLERA. The germ of hog cholera is often of sufficient virulence as to cause a fatal outbreak in the best cared for drove of hogs and of all the diseases described in this manual, there is probably none that causes as much trouble and loss as Hog Cholera.

One of the most common sources of contagion is buying from diseased herds. Can you afford to take any chances in insecting a herd of healthy hogs at the present prices? Would it not pay better to spend a little money and time preventing this dreaded disease? It can be done, the only question is, will you act before it is too late?

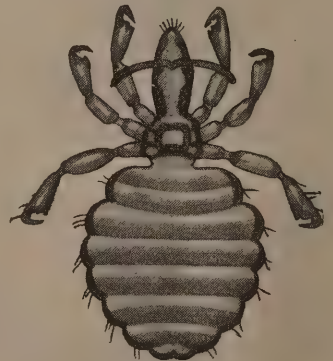
THE SYMPTOMS: These are well known to most all stock raisers, from the fact that when infection occurs it runs a rapid fatal course.

Among the most prominent symptoms are, unwillingness to move, shivering, loss of appetite and a rise in temperature; the animals appear stupid and dull, and will hide in the litter and bedding. Feed should be clean and fresh. Dirty, mouldy, decaying feed is not fit for hogs any more than it is for any other animal. Mix Watkins Germicide, Dip and Disinfectant with liquid feed at the rate of 1 teaspoonful of the Germicide to 1½ gallons of feed. Water that flows for miles in an open stream, and sometimes through pens where hogs are dying of cholera, is not fit for your hogs to drink. Give pure cool spring or well water. If the water is questionable then mix Watkins Germicide, Dip and Disinfectant in the same proportions as directed for feed.

As a precautionary measure, quarantine any hogs that you buy. Be sure that they are perfectly healthy before putting them with your herd, by keeping them in a different location for at least 14 to 21 days. We often find that precaution is not taken when an outbreak occurs in the neighborhood and the disease becomes spread about by people, dogs and other farm animals. There is danger of carrying the germs in the mud and filth that accumulates on the shoes of a person walking through yards where hogs are dying of cholera. Provide a shallow box filled with old sacks or other material. Keep this wet with Watkins Germicide, Dip and Disinfectant. Have every one wipe their shoes on this before going near your hogs. This will kill any germs that may have been picked up on the shoes.

Burn all hogs that die of cholera. This is the only safe plan. If disposed of by burying, it should be well done and the body covered with quick lime. However, we strongly advise the former method.

HOG LICE: As a general proposition it is more practical, cheaper, requires less time, and is less expensive in the long run, to have a small dipping tank and use a properly prepared standard dipping fluid like Watkins Germicide, Dip and Disinfectant on the smaller farm animals. Lice are a serious menace to thrifty growth and you are almost sure to find some of these parasites on the hogs in the spring. Begin at once and use one part of Watkins Germicide, Dip and Disinfectant to 60 or 75 of waterpartsshrduetaoinnnfectant to 60 or 75 parts of warm soft water; immerse the animal completely; allow it to remain in the solution from one to two minutes (see dilution table on page 50. If you are in a position that you cannot dip, use a spray pump or hand-



The Hog Louse.



Practical Hog Wallow.

dress. See that every part of the animal is thoroughly saturated with the Dip.

Apply a second time within 8 or 10 days after the first application to kill all nits or eggs that may have hatched out since the first dipping. Disinfect all the pens and premises with the un-used dip. If you don't, lice will re-infect the hogs from bedding, fences, posts, etc. You are making money by keeping hogs free from lice for there are no profits in trying to fatten lousy hogs. In keeping them free from lice by dipping you are also protecting them from other diseases. With Watkins Germicide, Dip and Disinfectant always on hand this becomes an easy matter.

MANGE. This is caused by a parasite which is much smaller than a louse and lives just underneath the outer layer of the skin and multiplies rapidly. It usually begins with a violent itching about the head, especially at the base of the ears, about the eyes, and gradually extends to the neck, withers, and inner surface of the thighs. Small blisters appear, causing the skin to puff up, which produces scurf; the skin wrinkles and the hair becomes loose, matting together. In an old case then animals looks as though it had been whitewashed and gotten dirty.

TREATMENT: Use Watkins Germicide, Dip and Disinfectant, 1 part to 60 or 75 parts of water. Dip or apply with a spray pump, or hand dress the animal. Break the crust and apply thoroughly. Repeat the application inside of 8 or 10 days and don't forget to disinfect the premises. A salve made of equal parts of the Germicide and tallow or lard will often prove effectual in severe cases.

ECZMA. This is a scaly rash, usually found among hogs that are confined to filthy pens and sheds or exposed to extremes of weather and poorly fed.

SYMPTOMS: Severe itching, with possibly a slight fever, poor appetite and dullness. On examination numerous red spots will be found on the skin.

TREATMENT: Change the conditions that have brought about the disease. Dip or hand-dress the hogs as directed under mange with Watkins Germicide, Dip and Disinfectant. Provide clean, dry bedding, a comfortable shed and good clean food.

URTICARIA. This is a skin disease brought about by irritation from lice, exposure, dirt, filth and often by a combination of several of these causes. It is not regarded as contagious.

SYMPTOMS: Similar to those described under eczma, with the exception that large swollen spots appear on the skin suddenly. These spread very rapidly until sometimes the entire body is covered. There is more or less itching; the hog will rub and scratch the inflamed skin, and the surface of the blotches appear red and moist.

TREATMENT: Give the hogs good care, including clean, dry, comfortable quarters, and light sloppy feed. Dip or hand-dress as directed under mange. Repeat several times if necessary. Give two or three ounces of Epsom Salts to each pig. Can be given in the feed or as a drench.

SORE MOUTH in PIGS. This is a highly contagious disease occurring in young pigs from a few days to a few weeks old and affects the upper jaw, the lower jaw and the snout.

TREATMENT: The affected parts should be washed once or twice daily with a one part of Watkins Germicide, Dip and Disinfectant to 75 parts of water. A small amount of slacked lime should be given in the drinking water.

SCOURS. (Diarrhoea.) Scours is a profuse and frequent discharge of faeces. It is usually a symptom of some intestinal disturbance due to an acute or catarrhal inflammation of the intestinal tract. In young pigs where the discharge is whitish or gray colored it is called scours; in the older pigs it may be designated as diarrhoea. In young pigs it is due to improper feeding. Old table slops, sour milk, green, spoiled, mouldy and rat-soiled corn, either given to the pigs or affecting them through the mother's milk, will cause this affection.

In older hogs the attacks may be due to some form of germs. The appetite may be good at the beginning but if the trouble is not stopped the pig becomes decidedly feverish and the appetite is lost. The back becomes arched, the hair rough, flanks hollow and there is an indisposition to move about.

TREATMENT: The trouble being due to some error in diet, requires that there is a decided change in the rations. First rid the bowels by giving a good cathartic. The change of food with the addition of 1 part Watkins Germicide, Dip and Disinfectant to 300 of feed or water will give favorable results.

WORMS. Hogs affected with worms in the intestinal tract run down in condition, become thin and lank, back is arched, eyes dull, walk stiffly and appear listless. The worms may be very numerous, at times completely filling the intestines. At the first sign of worms Watkins Germicide, Dip and Disinfectant should be mixed with soft feed at the rate of one teaspoonful to each 100 pounds of weight. For example, six hogs weighing 400 pounds each should be given 24 teaspoonfuls of the Germicide in slop or soft feed. To secure the best results affected hogs should receive individual treatment. Twenty-four hours before giving the treatment very little food should be given them. Then give one teaspoonful of the Germicide in one quart of water or milk as a drench to each 100 pound hog; larger or smaller hogs should receive a dose in proportion. Repeat the dose in a few days if necessary.

HORSES.

IN the treatment of horses, it may be well to mention that the greatest preventative against disease is proper food, clean food, clean well ventilated stables and good water. Spraying the stables with a solution of Watkins Germicide, Dip and Disinfectant, 1 part to 75 of water will free it from disease germs, and it should always be used in stalls where horses suffering from contagious or infectious diseases have been stabled.

MANGE. (*Sarcoptes scabiei* var. *equi*; *Psoroptes communis* var. *equi*.) This should be treated as in cattle (see page 58.) If the disease does not yield readily to this treatment, it is evident that the trouble is Sarcoptic Mange which is caused by a parasite which burrows deeper into the skin than the ordinary mange mite.

SYMPTOMS. There is an incessant, intolerable and increasing itching of some part of the skin (head, mane, tail, back, etc.,) the horse inclining himself toward the hand that scratches him as it affords him some relief from the intolerable itching. The hairs may be broken and rubbed off the part is never entirely bare; there may be eruptions or open sores from the energy of the scratching.

TREATMENT: This consists in the removal of the scabs by soapsuds, and if necessary, a brush or currycomb; then, if there are a large number of horses affected, it is advisable to dip in a solution of 1 part of Watkins Germicide, Dip and Disinfectant to 65 of water.

If there are only a few horses, then hand-dressing will be cheaper and quite as effective if done thoroughly. In this event the solution should be 1 part of the Germicide to 40 parts of water. Care must be taken that the fluid reaches all parts of the body and then see that all blankets, harness, combs, stable utensils or anything that has come in contact with the horse is treated with this solution. In about 15 days another treatment should be given to destroy the mites that have hatched out since the former treatment.

INTESTINAL WORMS. For colts, we recommend two to three teaspoonfuls of Watkins Germicide, Dip and Disinfectant in 1 quart of water and used as a drench. Full grown horses should be given three to four teaspoonfuls of the Germicide in a quart of water.

LICE: There are two kinds which usually attack the horse, one which is furnished with a narrow head and a proboscis for perforating the skin and sucking the blood, and the broad-headed kind with strong mandibles by which it bites the skin only. Apply Watkins Germicide, Dip and Disinfectant, 1 part

to 60 of water for hand-dressing, and 1 part to 75 of water when dipping in swimming tanks. Repeat the dressing or dipping in 10 days. This will destroy the lice on the horse, but if the barn is not cleaned and sprayed they will soon be as badly infested as before. One part of Watkins Germicide, Dip and Disinfectant to 75 of water should be applied generously to the stalls, mangers, walls, etc., by means of a sprayer or sprinkling can to eradicate the lice.

Very often horses that are kept near a poultry house become the victims of poultry lice. In fact, this is very common in some localities where many chickens are kept. The symptoms vary according to the number of lice present, and at times the trouble is discovered before any great damage is done. Then, again, the possibility of the horse having chicken lice may not occur to the owner, and he may present mange symptoms, as irritability, shaking itself and frequent attempts to roll, accompanied by incessant itching and scratching. If the animal shows these symptoms, examine the skin with a magnifying glass and you may find the cause of the trouble to be poultry lice.

TREATMENT: Follow the same directions as given for the regular horse lice, by making the dilution about one part of the Germicide to 75 parts of water.

FOR GALLS, GREASE HEEL, SCRATCHES, BARB-WIRE CUTS, SORES, WOUNDS, ETC., make a solution of one part of Watkins Germicide, Dip and Disinfectant to 100 parts of water, and dress the affected area every day. For further treatment consult section 6 on Diseases of Domestic Animals and Poultry.



Horse Louse

POULTRY.

THE poultry keeper has no greater enemy to resist than disease. Cleanliness is the one important feature in successful poultry raising. You cannot expect good and profitable returns unless you observe strictly the rules of cleanliness on the premises where poultry are kept. One of the first preventatives of disease is sunlight; Watkins Germicide, Dip and Disinfectant is another. Hen-houses should be roomy, well lighted, well ventilated and clean. Disinfect by applying to all woodwork, floors, roosts, etc., a solution of 1 part Watkins Germicide, Dip and Disinfectant to 100 parts of water. This is a simple and safe precaution against disease and the only way in which germs and parasites can be destroyed.

For symptoms and treatment of cholera, lice, roup, and other diseases in poultry see section 6 on Diseases of Domestic Animals and Poultry.

DOGS.

IT is a fact, that dogs, owing to their roving habits, are the "carriers" of disease that are not common to that animal. For this reason it is well to give your dog an occasional bath in 1 part Watkins Germicide, Dip and Disinfectant to 100 parts of water. This will kill disease germs and parasites.

FLEAS, LICE, ETC. Wash the animal in a solution of 1 part Watkins Germicide, Dip and Disinfectant to 100 parts of water. This treatment should be given every week until the parasites have disappeared.

MANGE. First break up the scabs with a stiff brush then dip the animal in a solution of 1 part Watkins Germicide, Dip and Disinfectant to 75 parts of water. This treatment should be given at least twice a week so as to kill all nits or eggs. One very important item is to disinfect the kennels and bedding with 1 part Watkins Germicide, Dip and Disinfectant to 75 parts of water.



Chicken Louse
(Magnified)

DISTEMPER. To a certain extent this disease can be prevented by thoroughly disinfecting the kennels daily with a solution of 1 part Watkins Germicide, Dip and Disinfectant to 75 parts of water.

HOUSEHOLD USES.

IT has been truly said that "cleanliness is next to Godliness," but cleanliness means more than simply scrubbing with soap and water. This will remove ordinary dirt and grime but this is not all that is necessary. Wherever you find dirt you will also find disease germs. Germs are to be found everywhere but they are so small as to be nearly impossible to see without the aid of a magnifying glass. Ordinary washing may remove some of them but large numbers are to be found lurking in small cracks and crevices and these remain after the washing has been completed.

Now in order to really accomplish cleanliness it is necessary to use something which will destroy those germs which have escaped washing.

The selection of a disinfectant to accomplish all sanitary purposes about the household is exceedingly important. It was our purpose in describing the origin and component parts of Watkins Germicide, Dip and Disinfectant to show that it is a high grade medicinal preparation for household uses.

The fact that this preparation is non-caustic, even at full strength, and non-poisonous when used according to directions or proper dilutions, makes it a valuable asset for household uses.

THE SICK ROOM: For this purpose it is indispensable in preventing the spread of all infectious diseases, such as tuberculosis, scarlet fever, smallpox, etc. Wash floors and wall, sprinkle freely everywhere. Soak clothes and wash dishes in this solution before being taken from the room. Allow to evaporate from saucers. Four teaspoonfuls of the Germicide to 1 quart of water.

BURNS AND SCALDS. In the absence of other of Watkins remedies, use Watkins Germicide, Dip and Disinfectant in this proportion. Ten drops of the Germicide to one pint of water.

CHAPPED HANDS: Use one teaspoonful of the Germicide in one quart of soft water. This will be found to be very satisfactory.

ITCHING AND FETID FEET: Put one teaspoonful of Watkins Germicide, Dip and Disinfectant into each quart of water and wash thoroughly.

KITCHEN SINKS AND DRAINS: Pour a teaspoonful of Watkins Germicide, Dip and Disinfectant into the sink or drain and flush with fresh water.

HOUSEHOLD CLEANING, ETC. Wash floors and woodwork with it. This will kill all disease germs and is also a protection against moths. Use four teaspoonfuls of the Germicide to each gallon of soft water.

WATER CLOSETS. Flush the hopper each day with a half teaspoonful of the Germicide.

OUT-DOOR CLOSETS: Mix two tablespoonfuls of Watkins Germicide, Dip and Disinfectant with one pail of water and sprinkle the closets and vaults.

URINALS: Brush the bowls night and morning with Watkins Germicide, Dip and Disinfectant and flush with clean water.

GENERAL FLUSHING AND DISINFECTING GARBAGE PAILS, DOG KENNELS AND CELLARS. To destroy foul odor. Four tablespoonfuls to one gallon of water.

BED BUGS. Wash the bedstead thoroughly with one-third Watkins Germicide, Dip and Disinfectant and two-thirds water.

HOUSE MOTHS AND FLEAS: Use 1 tablespoonful Watkins Germicide, Dip and Disinfectant to one quart of water and wash the floors and infested places. Also sprinkle the fluid over curtains, carpets, bedding, etc.

IN THE BATH ROOM: Use one tablespoonful of Watkins Germicide, Dip and Disinfectant to one pail of water for scrubbing seat, floors, woodwork, tub, etc.

THE BATH: One to two teaspoonfuls of Watkins Germicide, Dip and Disinfectant in a tub of water is both refreshing and invigorating.

Diseases of Domestic Animals.

ABORTION: (Slinking, Loosing, Slipping.) Abortion, when speaking in general terms, is the expulsion of the off-spring, before it can live, out of the womb. All domestic animals are liable to non-contagious abortion.

CAUSES: From any condition that profoundly disturbs the entire system, brutal handling, blows upon the abdomen, pneumonia, inflammation of the bowels, etc. Poor condition, weakness, watery condition of the blood, due to the excessive drain upon the system for all the elements that make up a healthy off-spring.

PREVENTATIVE MEASURES: Owing to the fact that a new life is being created within the mother, she is called upon to furnish the bone and muscle tissue, the blood and all other elements to nourish the off-spring from the moment conception takes place and birth is completed. In Watkins Stock Tonic you will find tissue builders that will meet these conditions; when fed according to directions on every package and you will find also that your animals will generally carry their off-spring throughout the entire period without mishap. Why Not Change the Progressive Stock Raiser's Present Rule of—"From Birth Until Marketed, Keep the Animal Gaining"—to read—"START AT CONCEPTION, AND ASSIST THE MOTHER UNTIL BIRTH TO PRODUCE LARGER OFF-SPRING, THEN KEEP THEM GAINING UNTIL MARKETED? If this sounds logical, Then Start With the Best Stock Tonic You Can Buy.

ABORTION, CONTAGIOUS. This is a highly contagious disease and causes serious loss annually to the cattle industry of this country. Owing to its contagious nature, it is presumably due to a bacterium, or "Germ" and when introduced into a herd from outside sources, by the purchase of a new cow or bull that come from an infected farm, it will spread rapidly throughout the entire herd, if prompt and radical measures are not applied to prevent the spreading.

PREVENTATIVE MEASURES: Separate all cows that have aborted and all cows which you think are going to abort. That is, any cow that shows a rapid swelling of the udder, the external and internal genitals (Vulva and Vagina) or show any vaginal discharge.

Remove and destroy fetuses and after-births, by burning the same. Radical measures are necessary to check the spread of the disease after it has once gained a foothold.

The first step is to disinfect the stable and premises of the apparently healthy animals by using Watkins Germicide, Dip and Disinfectant in a dilution of one part of Dip to 50 parts of hot water.

Second: Wash off the outside genitals of all pregnant cows, tails, hind quarters and udders by using Watkins Germicide, Dip and Disinfectant, in a dilution of 1 part Dip to 100 parts water, body temperature. Disinfect bull by clipping away preputial hairs, and disinfect the preputial sac with a dilution of 1 part of Dip to 200 parts of warm water, before and after each service, this can be accomplished by using two quarts of the mixture and using a small rubber hose or an ordinary fountain syringe.

Third: Follow the same directions as given for healthy animals, in the general disinfection of the affected animals. In addition, remove the after-birth if it is not delivered, and thoroughly douche out the womb and vagina, by using Watkins Germicide, Dip and Disinfectant in a dilution of 1 part Dip to 100 parts warm water. Use four gallons of mixture for each operation each alternate day, this can be accomplished by using a small rubber hose and a funnel elevated high enough for the liquid to gravitate.

All these operations must be carried out in a careful manner, and be liberal in disinfecting frequently the floor, gutter and stalls, as the Dip is cheaper than contagious abortion.

PREVENTATIVE TREATMENT: We do not know of any particular drug that will be of any assistance in an attack of contagious abortion. Good care and light feeding of food rations, and a generous portion of Watkins Stock

Tonic, to assist the animals through the attack, after the proper disinfection has been made, are of course necessary.

ABSCESSSES: They consist of accumulations of pus within circumscribed walls, at different parts of the body, and may be classed as acute, cold or chronic.

Acute abscesses may result from local inflammation in glands, muscles or even bones. Cold abscesses are termed large, indolent swellings that are the result of low or chronic, deep seated inflammations, in the center of which there is a small collection of pus.

A good type of acute abscesses is seen in colt distemper, located behind or under the jaw, a good type of cold abscess is often seen near the point of the shoulder, forming breast boils, that may swell to an enormous extent.

TREATMENT: In all cases where abscesses are forming we should hurry the ripening process, that is, we should be able to get a fluctuating point or soft point, commonly called pointing or coming to a head; when it can be opened by the stock raiser. However, if joints or large blood vessels are involved in doubtful locations, it is better to encourage further ripening and allow it to open of itself. A good line of treatment is to apply either Watkins Gall Ointment or Watkins Veterinary Ointment over the swollen surface, then apply a hot poultice until the pointing stage is reached, then carefully open with a sharp instrument, making only a slight opening until you are sure of pus, then make a free incision and syringe out the wound with a solution of Watkins Germicide, Dip and Disinfectant at a dilution of 1 part Dip to 75 parts of water daily. Keep the wound open and if necessity requires, keep a plug of cotton or gauze in the exposed cut for several days for free drainage. Protect the exposed cut surfaces by dusting on Watkins Antiseptic Healing Powder.

ACTINOMYCOSIS: (Lump Jaw, Big Jaw, Cancer, Jaw, Wooden Tongue.) This is a chronic infectious disease caused by what is called a "ray fungus" (Actinomyces.) The disease is not directly transmitted from one animal to another, but it seems apparent that the fungus is conveyed into the tissues by various food stuffs through slight wounds of the mucous membrane of the mouth, decayed teeth and it is seen at places on the bodies of all domestic animals, the favorite place being on the upper or lower jaw of cattle. It will, however, get into castration wounds on the mammary glands of sows through slight wounds, where it appears as hard, rough tumors.

TREATMENT: The treatment is surgical and medicinal. On valuable animals we would recommend both the surgical and medicinal treatment. This is accomplished by cutting away the diseased portion or giving the animal large doses of Iodide of Potash. Both of these procedures should be under the direction of a Veterinarian. On account of the slow development of this disease, it is more advisable to fatten the animal for the slaughter.

ACUTE CONGESTION OF THE LUNGS: All animals are subject to these condition. The horse, however, being the more susceptible. The condition usually arises through severe exertion brought to bear upon the constitution that has not been prepared for the strain. It is more often encountered in horses and other animals that have been severely worked or run and not in condition to stand the task.

SYMPTOMS: There are sudden systematic disturbances, indicated by distressed breathing, heaving flanks, dilated nostrils, rapid and small pulsations, from 80 to 100 per minute, elevation of the internal temperature, 104 to 106 F. and an anxious facial expression.

TREATMENT: Place the animal in a good warm box stall, cover with a warm blanket and give friction to the legs and body to encourage the circulation in the skin. Rub the legs briskly with Watkins Liniment and bandage them. For a horse, give the following every 4 hours until four doses are administered: Tincture of Aconite, 1 drachm ($\frac{3}{4}$ of a teaspoonful) and one ounce sweet spirits of nitre (or about two tablespoonfuls) at a dose. An attack usually lasts from six to ten hours. Follow the above treatment with liberal doses of Watkins Stock Tonic to restore the system to its normal functions.

ACUTE INFLAMMATION OF THE KIDNEYS: One or both kidneys may be the seat of acute inflammatory action; it may be an independent affection or the result of other systemic disorders.

SYMPTOMS: The animal will not move around willingly and seldom lies down; there may be slight belly pains, the urine scanty and off color with a strong odor, pain on pressure over the loins, fever and all the general signs of ill health.

TREATMENT: This is a condition that will end in further complications, if not properly treated and calls for diuretics and tissue builders. Apply frequently hot fomentations over the loins followed with Watkins Liniment and give Watkins Stock Tonic in liberal doses as it contains diuretics and system tonics. After the acute symptoms subside, continue with the tonic.

ACUTE INDIGESTION (Hoven, Tympanitis, Flatulent Colic.) This is a condition that often affects horses and is exceedingly common in cattle and sheep.

CAUSES: The result of sudden filling of the stomach with indigestible materials, such as new hay or corn, grain that is musty or given in undue quantity, large draughts of water after a full meal or when the animal is exhausted, or from severe exercise immediately after a full meal.

SYMPTOMS: At first, those of simple colic, the animal shows pain by champing the jaws, looking around at the side and pointing the nose well forward, by frequently lying down and attempting to roll, arching the neck and attempting to vomit and evacuate gas. It is recognized by the drum-like condition of the belly, grunting and painful breathing. Unless the animal is relieved, it dies from suffocation or through rupture of the diaphragm. (The diaphragm is the separating wall between the lungs and intestines.)

TREATMENT: First, the cause must be removed. In the milder cases, give Laxatives, (agents that remove the cause;) Antiferments, (agents that relieve pain and bloat.)

GENERAL TREATMENT: As a drench, give a horse from one-half to one pound, depending on size, a cow from one to one and a half pounds, and a sheep, eight tablespoonfuls of Glauber's Salt, for its cathartic action, to remove the cause. Add to the diluted Glauber's Salt solution for horses and cattle 1 teaspoonful of Watkins Germicide, Dip and Disinfectant, sheep one-half teaspoonful, depending on the size of the animal, to relieve fermentation. Give horses and cattle half ounce each of Tincture of Ginger and Capsicum in one-half pint of water, sheep one-half that amount or give Watkins Liniment as directed under colic, to relieve the pain. The condition can further be relieved by the use of soap and water injected into the rectum to stimulate bowel movement, and by putting a gag of straw or tarred rope inside the mouth of cattle and tie around the horns or neck to assist the escape of gas.

If the bloat distress continues, impaction is a further complication and requires surgical aid and strong remedies, which should be given under the direction of a Veterinarian.

ACUTE SCOUR IN FOALS, LAMBS, CALVES and PIGS: This is a condition known as diarrhoea or scour. It is really an acute diarrhoea—the result of infection and quite different from diarrhoea arising from simple causes.

The source of infection, in most cases, appears to be through the umbilical cord, at or about the time of birth, hence the necessity for due regard to cleanliness and the use of a mild antiseptic applied to the cord. It is a very exhausting complaint and reduces the little creature to a skeleton.

Scour is also common in lambs and is, as a rule, due to the presence of either flat or round worms. It is also advisable to carefully examine the excreta for evidences of tape worms. Serious losses commonly result through scour, more especially on certain lands where the land is low or where sewage is distributed. Yearling colts and calves are troubled with scour but in these animals it is generally due either to worms or indigestion through feeding unsuitable fodder.

In chicken cholera, scour is the most prominent symptom.

TREATMENT: If properly treated, the percentage of deaths should be small. Prevention is always better than a cure, and if the mother during pregnancy has been properly treated, and given Watkins Stock Tonic daily to assist nature, the off-spring when born, are not apt to have scours. Before the off-spring arrive, the stable should be thoroughly disinfected with Watkins Germicide, Dip and Disinfectant, one part of Germicide to 75 parts of water. Upon the arrival of the off-spring, thoroughly disinfect the naval and attach-

ed cord, with freshly prepared solution of Watkins Germicide, Dip and Disinfectant, dilution 1 to 75 parts of warm water.

If scours develop, begin by giving a dose of castor oil of from one to two ounces, depending on the size and age of the animal. Follow by warm nourishing drinks containing boiled milk and eggs. Give one teaspoonful of Watkins Stock Tonic or Watkins Liniment twice or three times daily as the case may require. Keep the patient warm, dry and clean. Remove all excreta promptly and disinfect the premises with Watkins Germicide, Dip and Disinfectant, as directed above.

ANEMIA: Under this title a considerable number of ailments can be classified but the term should really be limited to diminution in the number of red bloodcells.

CAUSES: Poor food, disease causing great debility, loss of blood, diarrhoea, lack of fresh air, or any condition which causes the blood to become impoverished.

TREATMENT: Give good, nutritious fodder and grain, give blood and tissue builders and system regulators like gentian root, sulphate of iron, salts of tartar, mandrake root and etc., which are all combined in a scientific manner in Watkins Stock Tonic.

Get the best, a tonic that you are able to see what the actual ingredients are on every package.

ANTHRAX. (Carbon:) This is a scourge of great antiquity and is caused by a red-shaped organism or germ, the *Bacterium Anthracis*.

It is an exceedingly destructive disease and is liable to affect man, horses, cattle, sheep, hogs, dogs, cats, rabbits, poultry and etc. As a rule it is fatal. Anthrax assumes various forms; sometimes it is an acute disease, in other instance sub-acute. As a rule it is difficult to diagnose by the stock raiser and he should seek the advice of a Veterinarian when there is any fatal outbreak among his live-stock.

All animals dying from anthrax, should be burned or buried deeply in quicklime on account of other animals eating on the dead carcass and becoming infected. The premises should be thoroughly disinfected with Watkins Germicide, Dip and Disinfectant, using a hot solution of 1 per cent Dip to 50 of water.

APHTHA. (Sore Mouth:) This comprises a vasicular eruption inside the mouth and upon the tongue of domestic animals.

CAUSES: Due to irritating fodder or decomposed slops, irritation from barley or wheat beards, etc.

TREATMENT: Feed light slopy grain rations and withhold all dry hay and fodder unless well dampened. Cleanse the wounds with Watkins Germicide, Dip and Disinfectant, in a dilution of one part of Dip to 100 of water twice daily. Consult the table under dipping for the proper amount of Germicide to use in making the different dilutions.

APOPLEXY OF THE BRAIN: An apoplectic stroke occasionally occurs in domestic animals and is denoted by the suddenness of attack. It is due to a rupture of a minute blood vessel in connection with the brain. Loss of consciousness, loss of locomotion, and the involuntary passage of urine, etc., are usually present. The condition is generally fatal.

BARB WIRE CUTS: Barb wire cuts are very serious and dangerous, from the fact that the barbs are usually rusty and the animal comes in contact with such force that a large gaping wound is the result, leaving a large surface open to infection and an ugly scar resulting, unless properly treated.

TREATMENT: The wound should be thoroughly washed out with Watkins Germicide, Dip and Disinfectant, dilution of 1 part Germicide to 75 of water. It is advisable to stitch wounds over three inches long. An ordinary sacking needle or linen or silk thread make a good suture material. Double the thread several times to get size and strength. Close the wound by making stitches about one inch apart and it is recommended that each stitch be completed by drawing the edges of the wound together and securely tying before starting another stitch. If you have plenty of suture put in all of the stitches that is necessary, leaving plenty of material for making a tie on the several stitches, in hard knots. Dress the entire wound daily with Watkins Barb Wire Embrocation. After the stitches have been removed, continue with the Embrocation as directed. In addition keep the wound covered with Watkins Antiseptic Healing Powder.

BITES AND STINGS: Both of these accidents are liable to happen to live-stock and this is especially true of horses when bitten while fighting. These conditions should always be carefully examined for while they may appear trifling on the surface there may be extensive tearing of the muscles beneath. Bee stings sometimes prove fatal to a horse. The best remedy for these conditions is Watkins Liniment or Cream of Camphor. Apply according to directions.

BLOOD POISONING: This is rather an ambiguous term and includes many diseased conditions, such as anthrax, black-leg, mortification, etc., but it should be limited to pyaemic infection, following upon the introduction of septic material from without, which causes the formation of multiple abscesses (Boils) in various parts of the body, internally and externally. It is necessarily a disease attended with large amount of danger which demands the presence of professional skill.

BLACK LEG. (Symptomatic Anthrax, Black Quarter:) It is a fatal infectious disease of thrifty young cattle, due to a spore forming bacillus or germ gaining entrance into the system from outside sources. Cattle over two old are rarely affected. The treatment must be wholly preventive measures. Black Leg Vaccine should be used at least once a year on all farms and twice yearly where the disease is known to have existed. All dead carcasses affected with the black-leg should be burned or buried deep in quick lime and the stable and premises thoroughly disinfected with Watkins Germicide, Dip and Disinfectant, 1 part Dip to 50 of hot water.

BOILS: (See Abscesses.)

BOTS IN HORSES, BOTS OR WARBLER IN CATTLE: This fly is commonly seen during haying or harvesting time, and the female deposits her eggs upon the hairs, especially about the knees, shoulders, and throat of the horse. The eggs closely resemble "nits" and adhere to the hair through the medium of a sticky substance. In due course of time the minute maggots are hatched and these cause the horse some irritation, hence it licks the seat of attack, and the maggots are taken into the stomach and fix themselves on the gullet end of the lining of the stomach, they are passed out with the excreta in the late spring or early summer months, in the shape of warbles (grubs) which bury themselves in the ground for a few weeks, where they develop into the full blown fly.

The yearly life cycle of the cattle bot-fly is practically along the same lines, the fully developed warbles are found along the backs of cattle during the spring months, and cause considerable irritation to the animal during the early spring months, while the warbles (Grubs) are trying to escape to the soil, in order to complete their cycle in the shape of the Ox Bot-fly, the annual loss to the hide and leather industry due to grubby hides runs into the millions.

The fly problem is receiving active attention along all lines, and the stock raiser should be more interested than any other class, for the fly is a common nuisance and disease breeder.

TREATMENT: This should be wholly along preventative lines. Start along about haying time or when the first of the nits begin to appear on your horses, by hand spraying daily, with one part of Watkins Germicide, Dip and Disinfectant to 75 parts of water, this will only require a few minutes of time and will kill bot-fly maggots as they hatch out, and also act as a repellent to the flies. It is important that you repeat the application every 24 hours.

For horses and cattle and other live-stock as a fly repellent, for bot and other flies, use the following mixture, which will not evaporate quite so rapidly.

1 part Watkins Germicide, Dip and Disinfectant.

1 part linseed, cottonseed or fish oil.

14 to 18 parts of water.

Add a bar or two of ordinary laundry soap, depending on the amount of the mixture you desire, in order to make the oil and water combine more readily. Shake the mixture well before using. An application of this solution will usually be effective for several days, but on account of its oily nature, it is not so desirable for use upon the regular driving and work horses. After the eggs have hatched and the larvae or maggots have gained entrance to the horse's mouth, they become attached to the walls of the stomach as explained above, and it is almost impossible to dislodge them with medicine. In the horse then

every effort should be made to repel the horse bot-fly and kill the larvae as they hatch on the skin during the summer months. Generous feeding of Watkins Stock Tonic where bots are known to exist, will tone up the intestinal tract, and assist nature in expelling the bots. In cattle, however, the grub or warble, is easily recognized by all stock raisers, by the familiar tumors along the backs of cattle varying in size from a hazel nut to a walnut, which cause the cattle considerable pain and irritation, on account of the familiar full grown grub or warble that is about one inch long and divided into several segments or joints, each of which bears very small bristles or hairs. We have told you before that the grub in the stomach of the horse and the grub underneath the skin, leave the winter place of existence in the spring for the warm ground and there develop into the bot-fly, which in turn starts the cycle over again by depositing the eggs again upon horses and cattle. We have told you that it is almost impossible to dislodge the bot grub from the stomach of a horse until that portion of the cycle is completed.

We have told you how you can repel and kill the small maggots as they hatch out from the nits when deposited upon animals during the summer months and we are now going to tell you how you can kill the grubs that infest the skin of all cattle and cause millions of dollars annually to be saved to the hide and leather industry of this country. We cannot emphasize the fact too much that the grubs should be killed upon cattle before they escape in the spring. The treatment is simple, and comes at a season of the year that is not a busy time for the stock raiser. When you discover in the spring that the grubs can be squeezed out, restrain the cattle in the stable or dehorning chute or other devices, have a solution of freshly made Watkins Germicide, Dip and Disinfectant made up at a strength of one part of the Germicide to 75 parts of water, press out the grubs by placing the thumbs on each side of the tumors and press vigorously and drop into the Germicide, keep an ordinary clean machine oil can filled with the Germicide, in the above dilution, and gently press the nozzle into the small opening and inject in a small amount of the solution. When you cannot extract them by this method you will kill the grub and interrupt the life cycle of cattle bot-fly. We feel that if you do not make any further use of Watkins Germicide, Dip and Disinfectant, that you should not neglect having a supply on hand for repelling and killing the bot-fly during its different life cycles.

Join the fly-swatting army, it means money to you.

BOT-FLY IN SHEEP: (*Oestrus Ovis*.) The common bot-fly in sheep neither chooses the stomach nor the back of its bearer as a place of residence during the cycle of changing from the larvae to the grub or bot stage. This insect may be regarded as a worse tormentor than either the horse or cattle bot. It attacks the nostrils of the sheep, and the distress thus occasioned is so great that the poor animals, in order to avoid the flies, will often bury their nostrils in dusty hollows and further protect their heads with the fore feet. The members of any flock thus attacked will also collect together in groups and jostle against one another with their heads downward so as to avoid the flies as much as possible. When struck by the fly, they stamp the ground violently, and exhibit other signs of distress, sometimes amounting to agony.

The fly attacks the sheep during the warm months, July and August generally being the worst. When the fly succeeds in depositing the larvæ it begins immediately to work its way up the cavity of the nose and finally gets into the small cavities in the head where development goes on. It is during this period that the most damage is done. As the grubs grow larger, a discharge from the nostrils is noticed, which may become very thick and sticky, gumming up the nostrils and making breathing very difficult. The sheep will often carry their heads low and will frequently lift their heads, pointing the nose straight up.

The treatment may be either preventative or surgical. The first is within reach of every stock raiser. Each animal should be caught and a mixture compounded of

Pine Tar $\frac{1}{2}$ pint.

Linsseed Oil $\frac{1}{2}$ gallon

Watkins Germicide, Dip and Disinfectant 1 tablespoonful.

Apply to the nose and nostrils with a brush, this should be repeated every few days during the warm months. Begin the preventative treatment early in the spring or whenever you know, by the actions of the sheep, that the fly is

beginning to bother and you will have better success than to wait until the sheep are already affected.

BOWELS, INFLAMMATION OF: Acute inflammation of the bowels is a common complaint, especially in horses, and arises from various causes; worms, irritant poisons, extension of inflammatory action, external injuries, etc.

SYMPTOMS: The leading symptoms of this disease are, acute pains in the belly, of a continuous character, a quick hard pulse, the animal will sit on its haunches and when the pain is excessively severe, it may attempt to climb the wall of the stall and groan from pain.

The stormy character of the disease sometimes leads to death within an hour or two. In other cases, the animal may continue in pain for days and then die.

The ordinary stock raiser may easily confuse this with simple colic.

TREATMENT: Start treating as simple colic by giving large doses of Watkins Liniment as directed under colic (See Colic) and if relief is not obtained within an hour or two, it will be necessary to seek further professional advice.

BROKEN WIND (Heaves, Asthma.) A pathological condition that is usually confined to the horse, and is of common occurrence. It is detected by a characteristic cough which, once heard, is easily recognized a second time. It is a peculiar hollow cough. In addition to the cough, the breathing furnishes evidence of broken wind. The act of inspiration (drawing air into the lungs) is performed normally, but the expiratory act is abnormal.

The last named is "double," constituting the so-called double expiration, this act being divided into two portions. The first part of the act being to expel the air as normally, but, in the second portion of it the remainder of broken-winded horse is considered unsound, and cannot stand heavy work, yet it may continue to perform lighter work fairly well.

TREATMENT: When the disease is well established there is no cure for it, owing to the rupture of the air-vesicles (Cells) in lungs. Proper attention to the diet will relieve the distressing symptoms to some extent, by using selected fodder and grain. Clover hay and bulky feed with little nutriment should be avoided.

Do not feed mouldy, dusty or dry fodder of any kind.

Feed light portions of the best timothy or wild hay, oats or corn to which chopped carrots, potatoes or turnips may be added. It is important to dampen all hay and grain.

To assist nature in a condition of this kind feed two tablespoonfuls of Watkins Stock Tonic at each feed.

BRUISES: A bruise represents the effects of some form of external violence, applied directly or indirectly, producing an extravasation of blood within the tissues, with or without rupture of the muscular fibres, and often results in serious complications if not properly and promptly treated.

TREATMENT: The repeated applications of hot water daily, followed with Watkins Liniment after the parts have been thoroughly dried, until the swelling subsides. If it proves more severe, after several days of this treatment, and there are indications of a collection of bloody serum or pus, encourage the formation by the application of Watkins Veterinary Ointment and apply a poultice over the same until it breaks or can be opened like an ordinary abscess. (See treatment of abscesses.)

The strength of the patient must be supported by good food, and the tonics in Watkins Stock Tonic, which should be fed three times a day, two tablespoonfuls at a time.

BURNS AND SCALDS: A burn may be superficial, and in some cases, causing deep injury to the skin and subjacent tissues.

TREATMENT: Use Watkins Veterinary Lotion, Petro-Carbo Salve or Ointment and then cover the surface with Watkins Antiseptic Healing Powder.

BURSAL ENLARGEMENTS: (Wind Galls, or Wind Puffs.) Swellings of this class occur in both horses and cattle, they are exceedingly common in horses. A bursal enlargement may occur wherever there is a synovial bursa or tendinous sheath, and such swellings are common about the fetlocks, hock and knees, varying in size and form. In some cases they are developed through hard wear and are sometimes indicative of the horse having performed a lot of hard work either before it has reached maturity or late in life.

A frequent situation is to find a bursal enlargement in cattle at the knee and consists of a distended condition which arises through intermittent pressure.

TREATMENT: In the acute stages or beginning of an enlargement, use Watkins Liniment or Veterinary Lotion and then apply cold wet bandages, three times daily. (In chronic cases use Watkins Veterinary Blister as directed under Spavin Lameness.)

CANKER OR FOOT (THRUSH): This is a disease of the frog and sole, characterized by a very fetid discharge and deep fissures at the heel and sides of the frog. It usually results from filth.

TREATMENT: Cleanse and pack with cotton saturated in a 1 to 25 solution of Watkins Germicide, Dip and Disinfectant. After 24 hours remove and fill the fissure with Watkins Antiseptic Healing Powder, repeat if necessary. Always apply Watkins Veterinary Ointment to the walls, heels and frog of horses feet to keep them pliable and in a healthy condition.

CAPPED ELBOW: (Shoe Boil.) It is a term which indicates a bruise or tumor at the point of the elbow and is generally caused by the pressure of shoes while lying down with the legs bent under. It should be prevented from re-occurring while treating by using leather boots or pads upon the front feet. Give a wide stall so the animal may be in a different position.

TREATMENT: If acute or recent, reduce the inflammation with cold water applications and use Watkins Liniment or Watkins Veterinary Lotion. If it has broken open, syringe the boil out with Watkins Germicide, Dip and Disinfectant, one part of the Germicide to 75 of water, or Watkins Barb-Wire Embrocation, which will be found to heal quickly. (If any callous remains after healing and the inflammation has subsided, use the Veterinary Blister described under Spavin

Lameness to reduce the callous.)

CAPPED HOCKS: This blemish appears on the point of the hock and is caused by kicks or bruises. Treat along the same lines as for Capped Elbows.

In all cases where the system is called upon to absorb poisons eliminated by inflammations, be sure to give generous doses of Watkins Stock Tonic daily.

CATARRH: (Cold in the Head.) A catarrhal affection is one denoted by a variable degree of congestion of the mucous membranes, more especially those lining the nasal chamber and eyes, but other organs may be affected if not treated early and properly.

TREATMENT: The animal should be well housed, with plenty of pure air without draughts and well nourished by giving bran mash, scalded oats, linseed gruel, etc. Thin slightly with water Watkins Germicide, Dip and Disinfectant, in a metal bucket, vaporize over an oil stove or by throwing in hot bricks or iron and allow the animal to inhale the vapor, to stimulate

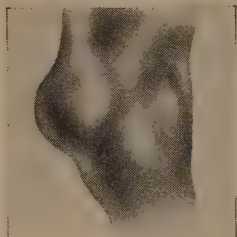
the mucous membranes, and avoid further complications or infection. If the animal refuses to eat, give Watkins Stock Tonic three times daily by mixing two tablespoonfuls of the Tonic with a little syrup and place it on the tongue with a small wooden paddle. Continue with the Tonic after the animal regains its appetite.

COLIC (Gripes, Spasmodic Cold.) This is pre-eminently the commonest disorder affecting horses, and in rare instances cattle, and other animals.

TREATMENT: In ordinary cases take one pint of warm water, add to this one teaspoonful of soda, a handful of salt and two ounces or about one-fifth of a dollar bottle of Watkins Liniment. Give this to your horse and in from fifteen to twenty minutes he will be well. In very severe cases, when the horse is very much swollen, and there appears to be much acid in the stomach (which you may know by the horse belching during his sickness) add a little more soda and then give four ounces of Liniment and drench your horse. If this does not give relief in fifteen or twenty minutes repeat the dose. It has rarely been known to fail to give relief when the horse is curable.



Capped Elbow



Capped Hock

CONTRACTION OF THE HEELS: Contraction of the heels frequently results from high toes and calkings, neglect in trimming the hoof and want of frog pressure.

TREATMENT: If possible, remove the shoes, pare the hoof down level with the frog. Blister around the coronary band with Watkins Veterinary Blister and when the effect of the blister is over turn the horse out to grass for a month. If necessary to use the animal, shoe with tips, only covering the front part of the foot, giving frog pressure. Use Watkins Veterinary Ointment daily.

CONSTIPATION: (Costiveness.) Give weekly a warm bran mash to horses, and Watkins Stock Tonic, and constipation will be unknown. Constipation is often the cause of hide-bound, rough coat, and loss of flesh. Give a physic of linseed oil, or aloes and use Watkins Stock Tonic.

CRACKED HEELS: (Scratches.) This is a condition very frequently seen in horses, and is denoted by an inflamed condition of the skin, which subsequently becomes broken, resulting in cracks, fissures and sores on the legs and heels, if severe will lead to lameness.

CAUSES: In not cleaning off mud and dirt, standing in filthy stables, bad blood, from draughts, etc.

TREATMENT: Clean and wash thoroughly with hot water and castile soap. Dry carefully. Apply Watkins Veterinary Ointment three times daily. Give bran mash and mix Watkins Stock Tonic with the feed three times daily. Disinfect the stable with Watkins Germicide, Dip and Disinfectant, one part Germicide to 75 parts of water.

CUTTING: (Interfering.) The term cutting is applied when a horse strikes the front or hind fetlock of the opposite limb, usually with the shoe, producing an injury to the skin. Defective conformation often leads to cutting and is a very difficult matter to remedy.

TREATMENT: The use of leather boots properly fitted will relieve and protect the parts from further injury. Treat the injury like any other form of local inflammation with Watkins Veterinary Lotion and cold applications.

COUGH: (Chronic.) The term chronic cough is applied to such coughing efforts as are of a permanent nature in the horse and is symptomatic of disease, either in the respiratory tract, stomach, etc. For example, roaring heaves, pleurisy, pneumonia, etc., all have a cough peculiar to such affection. For treatment see Catarrh.

CHOLERA IN HOGS: (Swine Plague.) It is an infectious, contagious disease, and communicable through bedding, drinking and feeding troughs, and the premises where hogs are confined but not to other animals so far as is known.

No disease is more feared than hog cholera. It sweeps down upon a neighborhood and leaves death and disaster. Hundreds of remedies have been marketed for its prevention and cure. We do not know of any positive remedy, outside of the new serum treatment that is being tried out by the U. S. Department of Agriculture and the different state live-stock boards, with good success which is called the serum treatment. With all contagious diseases, prevention is more satisfactory in every way than medical treatment. Every swine grower should use the utmost precaution to prevent the introduction of such plagues into his herd. Feed your hogs Watkins Stock Tonic strictly as directed, also disinfect stables and sleeping pens thoroughly. In no condition is the necessity for disinfecting more apparent than around hog yards. Thorough disinfecting with Watkins Germicide, Dip and Disinfectant, one part Germicide to 50 of water will aid greatly in preventing hog diseases. As a further precaution add the Germicide to the feed and drinking water in proportion of 1 to 300 parts.

CHOLERA: (Poultry.) Is a swift, fatal, and extremely contagious disease. The cause is generally traced to unclean quarters or drinking stagnant water. No remedy will prove helpful if these conditions are allowed to remain. Use Watkins Germicide, Dip and Disinfectant one part of Germicide to 75 of water, thoroughly disinfecting quarters and premises. The chickens that die should be burned. Cholera is frequently brought into a flock by the introduction of new birds. When buying additional birds, it is well to keep them separated from the old flock, for at least a couple of weeks to learn whether there is any infection among them. Do not fail to use Watkins Poultry Tonic as a preventative of disease and to increase their laying capacity.

CROP BOUND: (Poultry.) Improper feeding is the cause. Where too much grain has been given the fowls, it forms into a hard mass and cannot pass out of the crop. The contents ferment and unless the bird is relieved it will literally starve to death with a crop full. Pour a few drops of castor or sweet oil into the fowl's mouth and force it to swallow, then press upon the contents of the crop, to loosen up a small quantity of the contents and pass it out through the mouth. Supply more oil from time to time and repeat the process until the crop is emptied, then give the fowl some drinking water in which a pinch of baking soda has been dissolved. Follow this treatment in about twelve hours with a light ration of bread and milk to which has been added a little of Watkins Poultry Tonic.

DIARRHOEA: (Scouring.) Liquid evacuations are symptomatic of many disorders, and it is only by removing the source of irritation that a cure may be hoped for. Exposure to cold, presence of worms, unsuitable food, too much grass and sudden changes of diet rank among the principal causes.

TREATMENT: Simple diarrhoea can often be checked by change of food. If due to some irritating substance in the digestive tract of horses and cattle give Watkins Stock Tonic three times a day. If the purging continues, check by giving wheat flour, with three tablespoonfuls of Watkins Liniment. (For diarrhoea in foals, calves, lambs and pigs see treatment for Acute Scours.)

DISTEMPER: (Strangles.) This is a very common disease and most young horses have an attack of it but it is not uncommon in older horses. It is, no doubt, a specific complaint and transmitted from one horse to another by direct and probably indirect means. It assumes the regular and irregular forms. Regular when the abscess is situated beneath and behind the point of the lower jaw or at the point of the shoulder. Irregular when removed from this situation, or appearing internally.

SYMPTOMS: There is usually a slight fever, soreness of the throat upon pressure, difficulty in swallowing, a cough which is hard at first, subsequently becoming moist when the discharge issues freely from the nose.

TREATMENT: Sustain the strength of the animal by good nutritious food, to which has been added Watkins Stock Tonic in regular doses three times a day, keep the animal where it is clean and dry. **Local treatment:** Hot compresses followed by the liberal use of Watkins Cream of Camphor several times daily. When the abscess points, as will be shown by a soft place on the surface, open freely and allow the pus to escape. During the progress of the disease keep the nostrils and manger clean and disinfected with Watkins Germicide, Dip and Disinfectant, dilution 1 to 75.

DYSENTERY: In this disease the liquid evacuations are accompanied with a discharge of blood and is known among stock raisers under the title of bloody flux. In some cases it is a specific disease, whereas in others it arises from irritants.

TREATMENT: Give Watkins Stock Tonic in large doses (in gruel form if the animal cannot eat.) Upon regaining the appetite, continue giving the tonic in feed. If the purging continues, give Watkins Liniment in large doses as directed under diarrhoea.

DEPRAVED APPETITE: This is usually symptomatic of digestive disorder, and animals affected in this way are not as a rule thrifty. Some animals will eat all sorts of foreign substances, and these, especially in cattle, are the occasional cause of death.

TREATMENT: This condition of appetite requires tissue builders, give large doses of Watkins Stock Tonic until the depravity ceases, then give same as a regular tonic.

ECEZEMA: A disease of the skin frequently seen in horses and dogs, which is red, and has minute blister-like eruptions.

TREATMENT: Wash the affected parts with Watkins Germicide, Dip and Disinfectant, 1 to 25 parts hot water and apply Watkins Veterinary Ointment twice daily. As a regulator give Watkins Stock Tonic three times daily as directed.

EGG BBOUND: (Poultry.) Old fowls are usually victims of this disease which is largely the result of improper feeding. Do not give any fat producing foods but let the diet be largely grain stuff to which Watkins Poultry Tonic has been added, this will generally be found to give a decided relief. In more serious cases a little sweet oil will be found beneficial.

EGG EATING: (Poultry.) Fowls that are properly fed and cared for are not apt to develop this habit. The cause is found in failure to provide sufficient shell making food. The habit should be broken up speedily or it will spread to other birds in your flock. One method of affecting a cure is to blow out the contents of an egg and then fill it up with soft soap. Close up the ends and put it in the nests where the fowls can get at it. This repeated two or three times will usually cause the birds to discontinue the habit. Another method is to pare the upper beak until it is nearly ready to bleed then put china eggs in the nest. We prefer the former method as it is less cruel. If the beak is pared the bird should be given soft food until the bill grows out again. When feeding soft foods be particular to use a good quantity of Watkins Poultry Tonic as this will prevent indigestion and similar troubles that frequently arise from using large quantities of soft food. Of course as soon as this egg eating habit is discovered you should at once provide oyster shells, mortar, cut bone or similar shell making material.

FALLING OF THE WOMB: (Prolapsus Uteri, Casting the Withers.) Inversion or prolapse of the womb is not an uncommon accident, especially in cows; it generally occurs after delivery. Previous prolapse is a predisposing cause, but violent straining of any kind, combined with loss of tone in the parts, favors its appearance. When the womb hangs out for a few hours it becomes engorged with blood and gangrene may set in. Sometimes fatal bleeding happens at the time of prolapse. Professional aid is absolutely necessary, but meanwhile if the afterbirth is still attached it must be removed before the organ is replaced if possible. Wash the womb clean with a solution of one part Watkins Germicide, Dip and Disinfectant to 100 parts of water while a couple of assistants are supporting the organ in a sheet or other material that is of sufficient strength; have the assistants twist up the ends of the cloth to bring pressure upon the engorged organ in order to drive the blood out. Gently force the womb back into place while the twisting is in progress. If the cow continues to strain after the womb is returned, and they usually do, pack the womb by using one or more bed sheets, first dipped in a solution of Watkins Germicide, Dip and Disinfectant, 1 part Dip to 100 parts of water and stand the animal with hind legs elevated from 10 to 20 inches. Remove the womb pack inside of 12 hours. Improve the tone of the system by giving Watkins Stock Tonic three times a day in the food. If the discharge continues 48 hours after replacement, flush out the womb, in the same dilution as given above, with about four gallons of freshly made Watkins Germicide, Dip and Disinfectant by carefully inserting a small rubber hose well into the womb and attaching a funnel to the other end and raising it high enough to get a free return flow of the liquid. This should be done every other day until the discharge ceases.

FEATHER EATING: (Poultry.) If plenty of free range is given your fowls they are not apt to develop this habit which is caused nearly always by the chickens desiring more meat or animal food.

FOOT ROT: (Cattle and Sheep.) It is exceedingly common among cattle and sheep that are pastured on low-lying pastures, muddy lanes and yards. Cleanse and disinfect between the claws by standing the animal in Watkins Germicide, Dip and Disinfectant, solution 1 to 25. Afterwards apply an ointment of flour of sulphur, pine tar and Watkins Germicide, Dip and Disinfectant equal parts, repeat the operation if necessary.

FORAGE POISONING: (Plant Poisoning, Corn Stalk Disease, Loco Poisoning, Etc.) Forage poisoning may affect all kinds of domestic animals, it is probably safe to say that stock poisoning, except by poisonous plants, is very rare. Occasionally by accident or intent, they may eat or receive by mistake poisonous materials, boiled linseed oil, paris green, arsenic, carbolic acid, strychnine, etc.

Forage poisoning is receiving extensive study at present, on account of the annual losses that can be directly attributed to it, and we would recommend that the Stock Raiser acquaint himself with the poisonous plants in his immediate locality. The State and Federal Governments have classified these plants, and it is of vital importance to be able to recognize the various kinds. Forage poisoning has been known to kill many thousands of animals in a very short time. The recent extensive loss of horses in Kansas and Nebraska are examples of extensive losses. Forage poisoning symptoms scarcely resemble any known disease, death soon follows and the cause remains a mystery.

In all cases of suspected forage poisoning you should obtain the best professional assistance.

FROSTED COMBS: (Poultry.) If the comb has become black there is no remedy. As soon as it has been seen that the comb is frosted draw the frost from the comb by applying snow, if it can be had, or extremely cold water.

As soon as the frost is out anoint with Watkins Petro-Carbo Salve. If you have done your work carefully you can probably save the comb or at most only the tip will be darkened.

FOUNDER: (Laminitis.) This is an inflammation of the internal structure of of the feet and does not differ from inflammation of other parts of the body, with the exception, that the hoof or outside covering is very unyielding and causes extreme pain on account of the expanded or congested condition of the tissues within.

CAUSES: They are as wide and variable as in any other local inflammation. Example: Unusual excitement, excessive blood supply, bad shoeing, careless parting of the feet, concussion, rapid changes in temperature, overfeeding, etc.

SYMPTOMS: They are nearly always constant and can scarcely be misinterpreted by the most casual observer. The animal suddenly becomes extremely lame and will move only when forced. If the front feet, only, are affected, the hind legs are brought well forward under the body, the feet are hot and the breathing rapid or labored.

TREATMENT: This condition calls for Laxatives, Diuretics and Cold Applications in the first or acute stages. Feed the animal only light rations, place the affected feet in cold water at five hour intervals for the first 30 hours or tie swabs of suitable material around the feet and keep soaked with cold water. Give an ounce of saltpetre every six hours for the first 30 hours, then twice daily until the acute attack is over. To assist in restoring the normal functions, give three tablespoonfuls of Watkins Stock Tonic twice daily. After you have ceased applying the cold water treatment, use Watkins Veterinary Ointment for restoring the normal growth to the hoof. In old cases an application of Watkins Veterinary Blister (as directed under Bone Spavin) will promote the growth of normal hoof tissue when other remedies fail.

GAPES: (Poultry.) So called, owing to the leading symptoms, namely gaping. It affects poultry, and other birds, being produced by minute thread-like worms affecting the air tubes, and once the disease appears amongst poultry it is exceedingly difficult to get rid of, and one bird may infect the whole lot. A wet season favors it, and the worms are coughed up, thus spreading the infection.

TREATMENT: Change the birds to fresh ground, and separate the infected ones from the others. See that the water supply is pure, and the addition of a little lime-water will have a beneficial effect. The premises should be daily disinfected with Watkins Germicide, Dip and Disinfectant, one part of the Germicide to 75 of water. The affected birds should be caught and a feather dipped into a 2 per cent solution of Watkins Germicide, Dip and Disinfectant, and passed down the windpipe, and quickly withdrawn. Give the bird its freedom and it will often expel several worms by coughing. Bear in mind that a good poultry tonic is necessary to sustain the birds, use Watkins Poultry Tonic with the daily ration. Do not overlook the necessity of a thorough disinfection of the premises daily with Watkins Germicide, Dip and Disinfectant.

GLANDERS: (Farcy.) This is a specific disease, solely caused by minute germs known as the bacilli mallei. It may assume an acute or chronic form, usually the latter, and is essentially a disease of horses and mules, but communicable to man, therefore extreme precautions must be used to prevent infection, because it is very fatal to mankind. The old term "Farcy" is not used, farcy being the skin manifestation of glanders, in which the absorbent vessels, and skin are implicated, by the presence of the so-called farcy-buds, from which in due time there issues a characteristic discharge. The symptoms vary in all cases, and are frequently obscure and veterinarians rely on the Mallein test for diagnosis. In some cases there may be a persistent cough, ulcerations of the visible mucous membranes of the nostrils, a discharge from the nose (usually from one nostril) with or without a knotty swelling, beneath the posterior angle of the lower jaw. But all these signs may be absent and yet the animal have glanders.

We would advise that you seek professional aid in all cases where you suspect glanders or the so-called farcy and remember that this is a dangerous and infectious disease and calls for the most thorough disinfection of the stables, premises, utensils and equipment that has come in contact with the affected animals. Use Watkins Germicide, Dip and Disinfectant in a dilution of one to 50 parts of water. Go into the matter thoroughly for the Germicide is inexpensive and may be the means of stopping further infection.

GREASE HEEL: Grease Heel is an aggravated form of cracked heels. Cause and symptoms are the same as those which induce scratches.

TREATMENT: Give the animal good surroundings and after a few feeds of bran mashes and scalded oats, give a horse one-half pound of Gluber's Salt in a drench. Give two drachm doses of saltpetre in the drinking water three times daily. Remove the scabs or crusts from the legs by applying warm poultices of linseed meal for 12 hours; after removing the poultices wash the affected parts with a 2% solution of Watkins Germicide, Dip and Disinfectant, wipe dry and apply Watkins Veterinary Ointment daily. Horses affected with grease heel should be given a continuous course of treatment with Watkins Stock Tonic.

GALLS: (Harness, Saddle, Shoulder, Chafes, Burns, Etc.) Galls are brought about by the chafing of the different parts, by collar, saddle, ropes, burns, etc.

These conditions and accidents are continually happening to live-stock, which if attended to promptly, may be readily corrected by the use of the proper remedy, but if neglected, may result in permanent injury to the animal. It is all important then, that ever stock owner should have Watkins Gall Ointment on hand at all times. It is not affected by climatic conditions, consequently it is always ready for use, and is effective. Don't fail to procure a box at the first opportunity. Watkins Antiseptic Healing Powder is also valuable for drying up and healing sore necks, shoulders and backs.

GARGET: (Inflammation of the Udder, Mammitis, Mastitis.) This disease affects both cows and ewes but is more common in the former. It is known by the various names given above, and numerous forms of the disease exist, but in a small manual like this, the description of these differences are unimportant.

Inflammation of the udder may be acute or chronic, curable or incurable. It varies in its course, its causes, and the remedial agents to be employed, therefore it is a difficult task to lay down any particular rules.

Tuberculosis of the udder is incurable, and is usually denoted by the knotty feeling at the base of the teat.

A frequent cause of garget is exposure of the udder to cold, more especially during calving, there being a physiological congestion at this period which may easily pass into one of disease. It is a painful condition, and often started through imperfect or irregular milking. The udder sometimes assumes enormous dimensions, becoming hard, reddened and painful, producing a considerable degree of systemic disturbance.

TREATMENT: This should be general and local. Start by drenching a cow with 2 pounds, a large ewe with one-quarter of a pound, of Gluber's Salt, follow through the course of the disease with Watkins Stock Tonic. Milk the animal freely. Apply hot water to the udder several times daily and follow this by an application of Watkins Veterinary Lotion or Barb-Wire Embrocation. Some of our customers prefer Watkins Petro-Carbo Salve or Watkins Cream of Camphor. Both are good.

GID: (Turn-Sick.) The term gid or turn-sick is applied to a disease affecting sheep, indicated by such symptoms as turning round in a circle, dizziness, jumping up, partial blindness, etc. It is due to a bladder worm or cyst (*cornurus cerebralis*) locating itself upon some portion of the brain, and represents the larval form of a tape-worm that is found in the bowels of the dog, known as "*Taenia coenurus*." Sheep acquire this disease through drinking infected water or grazing upon infected land, hence the necessity of keeping all dogs free from tape-worms. In addition to the symptoms of vertigo, the upper bones of the head, over the seat of the hydradid or cyst, sometimes undergo softening and the cyst can be removed by a surgical operation, using a special instrument for this purpose. The fluid and wall of the cyst must be extracted. The small white bodies in the fluid represent the heads of future tape-worms and, therefore, must be destroyed.

PREVENTION: Destroy or treat all dogs for tape-worms every two or three months, under the direction of professional advice.

Destroy all heads of affected sheep that die, by burning the heads. Unless this is done, the dogs will become re-infected by eating the heads. All affected sheep should be treated under direction of professional advice or slaughtered.

HAEMORRHOIDS: (Piles.) This is due to the congestion of the veins encircling the anal opening and frequently observed in the hogs, more especially in animals that suffer from constipation, congestion of the liver, etc. In some cases the vessels begin to bleed and the animal aggravates the disease by rubbing the anal opening. Worms are sometimes the cause of the irritation.

TREATMENT: Give soft food, add two tablespoonfuls of Glauber's Salt to the ration and repeat if necessary. Give Watkins Stock Tonic twice daily with the food ration. If you suspect worms follow treatment for worms. Apply to the piles Watkins Petro Carbo Salve.

HOVEN, BLOAT, TYMPANITIS, MAD STAGGERS: These are conditions that should be classified as acute indigestion or colic in domestic animals, as they are only aggravated forms of indigestion or colic and arise from the same causes. For treatment see Acute Indigestion and Colic.

HOOSE, HUSK, LUNG WORMS: This is a parasitic disease affecting calves and lambs, occasionally the pig. It is due to the presence of thread-worms in the air-tubes. There are two species in sheep and one in calves. The name is derived from the character of the husky cough. Lung worms are more prevalent during damp weather and marshy lands or low-laying pastures, favor their presence, the development of the ova being favored by moisture. The parasites set up a mechanical bronchitis, and this in turn, will lead to consolidation of the lungs.

TREATMENT: Change to fresh pasturage, and house the infected animals. Further treatment should be left to a veterinary surgeon, which consists of injections of drugs into the windpipe, and fumigation.

INDIGESTION: (Chronic.) The term indigestion is chiefly employed for indicating a class of symptoms which arise through faulty digestive functions, but in some cases it is but symptomatic of functional disorder, and in others organic disease of such organs, as the liver, stomach, bowels, etc. is the cause.

All domestic animals are liable to have indigestion, through faulty feeding, or heavy feeding, excessive feeding of any particular grain, etc.

When an animal does not thrive there is some functional disorder whether it be horses or poultry and in order to keep your live-stock in prime condition feed a well balanced ration, and Watkins Stock and Poultry Tonic and avoid the setback due to indigestion.

INFLUENZA, PINK EYE, EPIZOOTIC, CATARRHAL FEVER: This is highly infectious and a specific disease of horses that may be transmitted in many ways, through the feeding utensils, blankets, water troughs, etc., it is also called shipping fever in large horse markets, where the stables are hardly ever free of the malady. Spring and Autumn are the seasons when it is most prevalent. One attack confers a certain amount of immunity though not absolute immunity. The symptoms are so well known by the stock raiser, that it does not seem necessary to go into detail here.

TREATMENT: When possible segregate the sick animal, and disinfect the premises daily with Watkins Germicide, Dip and Disinfectant, one part Germicide to 50 of water. If no complications supervene in simple cases, all that is required is good surroundings, care and proper clothing, and a cool laxative diet, to which add a full dose of Watkins Stock Tonic. If the fever runs high, one-half ounce of saltpetre dissolved in the drinking water twice a day is excellent. If the appetite fails, one-half to a drachm of tincture of nuxvomica with two drachms of tincture of gentian should be given in one-half pint of water three times daily. Keep feeding Watkins Stock Tonic until the animal has fully regained its normal strength.

INTERNAL PARASITES: (Worms.) See treatment for Worms.

JAUNDICE: (The Yellows.) Jaundice is a symptom of deranged liver functions, it occurs in all domestic animals. The jaundiced appearance is due to the entrance of bile pigments into the blood, and their subsequent distribution throughout the body. The skin, whites of the eyes, and the mucous membrane of the mouth and nose take on a deep yellow appearance, there may be present a

deep yellow coloration of the urine. When animals are fed on food too stimulating in its nature, as in the forced feeding of cattle and horses for market purposes, congestion of the liver often appears. You must meet these every day disorders by continually feeding Watkins Stock Tonic. Every pound lost through these conditions is money lost. Study the formula of Watkins Stock Tonic and you will find it is one of the best.

LAMENESS: The causes of lameness in horses are numerous and it is possible to write an exhaustive treatise upon this subject but that would require a manual much larger than this one. It is our purpose, however, to tell you what kind of lameness you can treat successfully. The average stock raiser can treat acute and chronic lameness if he has the proper remedies. The market is full of the so-called spavin and ring bone cures, but right here we want to say that there are some conditions that cannot be cured, as we shall show later on in describing the different kinds of lameness.

For acute and sub-acute lameness, Watkins well known Anodyne Liniment, Veterinary Lotion, Cream of Camphor, Veterinary Ointment and Petro-Carbo Salve have been successfully used by many thousands of our customers.

A COMBINATION THAT WILL GET RESULTS—HERE IT IS.

WATKINS ANODYNE LINIMENT: For all acute lameness, due to sprains of muscles, tendons, ligaments, joints, etc.

Watkins Veterinary Lotion: For acute and sub-acute lameness due to sprains, sweeney, swellings, etc

Watkins Cream of Camphor with rubbing for strains and stiff and sore muscles and joints.

Watkins Veterinary Ointment: For semi-chronic conditions, due to bruises, founder, corns, quarter cracks, and cracks, etc.

Watkins Petro-Carbo Salve: As an emollient dressing following the use of the above remedies, for its softening and soothing properties to irritated surfaces, or where any surface is hard and dry. Do not forget this combination of five remedies for the treatment of lameness, when the Watkins man visits you. It means money to you to have a successful combination that is prepared, guaranteed, and sold direct to you by the J. R. Watkins Medical Company.

Horses and mules are worth too much at present to even allow the slightest blemish to go un-treated, as blemishes reduce the sale price from ten to twenty dollars, or more depending upon the location. Lameness may be defined as any irregularity of the gait, regardless of the cause or degree. There are many kinds, and due to many causes. Here are a few suggestions, although not infallible, will aid in determining the location of lameness.

First: It is usually quite easy for any observer to recognize that a horse is lame, provided the lameness is at all decided, but there are many cases where lameness is so very slight that it is difficult for even an expert to locate it or be at all sure that the animal is really lame.

Second: It is a very common error to locate the lameness on the wrong side; by some observers. This can easily be avoided if one will just remember that the head and weight of the body in general comes down more forcibly on the sound leg. For example, a horse being lame in the left front leg, will drop more forcibly upon the right front leg. The same is true in the posterior legs.

Third: Some forms of lameness are detected with great difficulty when the animal is walking but more easily seen when trotting. It is important to always trot an animal for locating any form of lameness where there is any doubt regarding the location, although the observer should study the movements by walking and trotting if possible.

Fourth: The animal, when in doubt, should be tried on hard and soft ground. Lameness in the feet is more pronounced when the animal is forced to travel rapidly on hard ground while a horse that is lame in the shoulder or hip, usually travels with great difficulty in deep mud, snow or very soft ground.

Fifth: It is especially important, in making a close examination, to begin at the right place, for it should be borne in mind that the foot is a common seat of lameness. It has come under our observation, where cases of lameness were located in the shoulder, and later the cause was found to be due to nail wounds

in the feet. Always make it the rule, in making an examination, to start at the foot and not at the shoulder or hip. First remove the shoe and carefully examine the foot for nail punctures, corns, stone bruises, etc. Next work up the leg noting all joints, tendons, ligaments, etc, for inflammation comparing the suspected leg with the opposite one. By following these suggestions and reading the following description, the more common forms of lameness can be easily recognized.

BOG SPAVIN: This is a loose term but most stock raisers are familiar with it, as a puffy condition of the hock joint, the degree of distention being variable. It does not necessarily constitute unsoundness or a seat of lameness, as some have a puffy condition of the hock on the morning following active work.

CAUSES: It is apparently due to excessive secretion of synovia, or joint oil, due to some weakness of the capsular ligament (joint sack) of the joint.

TREATMENT: When it becomes excessive in size, we would recommend applying an application of Veterinary Blister as directed under bone spavin in order to strengthen the joint sack against further distention, as we consider that the removal of the blemish is impossible.



Bone Spavin

BONE SPAVIN, OCCULT SPAVIN: (Jack.) A bone spavin comprises a variable-sized deposit of bone, situated upon the inner and lower aspect of the hock, or hocks, in accordance whether one or both hocks are affected. The size of the spavin is no criterion as to the degree of lameness it may produce, because some very small spavins give rise to the most severe form of lameness whereas very large ones are often inoffensive. A hock may be spavined and yet will not show any enlargement, or bony deposit that can be observed, but will have all the characteristic symptoms of spavin lameness. This condition is known as "Occult" or blind spavin. The name "Jack" is a common term among horsemen.

Spavins are a diseased condition of the small flat bones of the hock (Tarsal Bones) and represent nature's method of repair. Whether the recovery is brought about by natural or artificial conditions, it is due to the inflammatory condition present, which forms new bone tissue that unites these small bones together by what is called technically, ankylosis, of the joint, which means in plainer terms that there is a consolidation or cementing together of the small hock bones that prevent the inflamed and roughened surfaces from rubbing when the leg is moved.

HEREDITARY OR PREDISPOSING CAUSES: By many, spavin is regarded as a hereditary disease and it is well known that hocks that are narrow or tied in below are more liable to develop spavin than those without such conformation.

EXCITING CAUSES: Any condition which favors sprains, such as fast driving over hard or uneven roads, unequal paring of the hoof, thus causing the weight to be unequally distributed in the joints, and severe labor in early life, or blows, bruises, or any injuries to tendons, ligaments, or joints may cause spavin. In addition to these causes may be mentioned sprains or straining while starting heavy loads on an icy surface or sliding on a bad pavement.

SYMPTOMS: A spavined horse steps on the toe, and carries the hock joint with as little movement as possible. In very recent cases the lameness usually disappears or at least greatly improves with exercise. What is known as the "Hock Test," is made by holding up the leg with the hock sharply bent for several minutes. Then the horse is started suddenly. In case of spavin the first few steps are very lame. If made to turn quickly in a short circle the animal flinches and may even hop on three legs a little distance. As the case develops the lameness does not work off so readily and finally exercise may aggravate instead of diminish it and the horse sometimes becomes entirely unfit for service.

TREATMENT: Complete rest, the application of the milder agents for reducing acute and sub-acute inflammation, and the use of a good blistering agent in the chronic inflammatory stages. Treat a case of suspected spavin lameness as ordinary acute inflammation, by cold water applications, cold water bandages and Watkins Anodyne Liniment, three times daily for at least five days, in order to bring about a recovery in the acute stages. Should the

condition prove to be more than a simple inflammation, continue along the same lines by using Watkins Veterinary Lotion for at least another five days. If this treatment is carefully carried out and the animal does not respond to the milder treatment, use Watkins Veterinary Blister.

Owing to the constant demand for a remedy for the treatment of the chronic forms of spavins, ringbones, curbs, splints, sweeney, founder, etc., and to reduce chronic enlargement like capped hocks and capped elbows, etc., we recommend a veterinary blister which can be easily prepared and which is especially reliable and efficient.

FORMULA FOR BLISTER:

Burgundy Pitch -----	4 ounces.
Resin -----	4 ounces.
Yellow Wax -----	3 ounces.
Olive oil -----	11 ounces.
Cantharides -----	6 ounces.
Euphoribum -----	2 ounces.

Melt the first three, add oil and then the powders; stir till cold.

DIRECTIONS FOR APPLYING THE BLISTER: Clip the hair closely over the affected part and then rub briskly for a few minutes with a coarse brush. Apply a generous coat of the blister ointment with a small wooden paddle, and rub briskly with the hands for ten minutes, then apply a light coat smoothly over the affected part. In 48 hours, wash off and grease daily, after thoroughly drying with Watkins Petro-Carbo until all scabs are completely removed. Keep the animal tied up by the head, in order to keep the blister from coming in contact with other parts of the body, until the blister is washed off. Grease the opposite leg, and below the point of blistering, with lard, vaseline or Watkins Petro-Carbo Salve while the blister is working.

NOTE—The blister will not affect the hands if promptly washed after applying. It is important that blister be rubbed in well and there is no better agent than the hands for this purpose.

The time required to effect a cure is from four to six weeks from the time of applying the blister and under no circumstances should the animal be worked during this period. It rarely fails to bring about the desired results following the first application. It is better to wait several weeks, if there is a slight lameness present, to see if it will subside upon giving the animal light work, to limber up the muscles following the long rest.

Do not attempt to rush matters by applying another application inside of six weeks from the date of the first application. If the lameness passes off and a bunch remains, let well enough alone, as all that can reasonably be expected, is to make the animal serviceably sound.

Watkins Veterinary Blister brings about the desired results, no matter how old or how bad the case may be or how many times other remedies have failed.

BLOOD SPAVIN: A blood spavin is merely a distention of the vein as it passes over the front of the hock and is not regarded as a serious condition, or one that calls for any severe treatment. A blood and bog spavin are somewhat confusing to the ordinary observer from the fact that they are in about the same location of the hock. As we have told you a bog spavin is an enlargement of the joint capsule.

CORNS: Corns consist of bruises to the sensitive sole, and show in the form of reddish discolorations of the horny sole beneath the bruise.

TREATMENT: Remove the shoes, take away the pressure by cutting away over the corn and apply Watkins Veterinary Ointment two or three times a day or once daily and cover with oakum or cotton and keep in place with leathers.

DISLOCATIONS: Either an organ, such as the eye, or a bone entering into the formation of a joint may be displaced from its normal position. If so, it is called a dislocation. In the horse the stifle-joint is not uncommonly the seat of injury; the patella, or knee cap, being displaced to either the inner or outer side, causing the animal to drag the limb. In all cases of dislocation, we would advise you to seek professional aid. In case you cannot obtain professional aid, the following suggestions are offered for the replacement of a dislocated stifle-joint, as this condition causes extreme pain to the animal and the longer it is left unaided, the more difficult it is to replace. Apply hot water freely over the surrounding muscles from the point of the hip to the hock joint, to overcome

the contractions of the muscles, then have an assistant bring the leg forward and upward as high as possible, and try to replace the patella bone (which corresponds to the knee cap in man) by having the assistant slightly rotate the leg, depending upon which side the displacement has taken place. Stifle dislocations are a common occurrence in young animals, that can often be corrected by the application of Watkins Veterinary Blister. Apply as directed under bone spavin for 24 or 36 hours.



Curb

CURB: Both light and heavy horses are subject to curb which is a variable sized enlargement of the ligaments and tendons on the back of the hock about three inches below the point of the hock. One or both hocks may be curby and of unequal size and are frequently produced by a sprain of the ligaments. It is not often that a curb causes lameness and when it does, it is usually during the acute or formative stage.

TREATMENT: In the acute inflammatory stages treat with Watkins Anodyne Liniment or Watkins Veterinary Lotion until the inflammatory state is over. We do not advise the use of a blister. However, if you have a valuable animal and wish to reduce the enlargement by a course of treatment, write our Veterinary Service Department and we will advise and prescribe treatment that will

reduce a curb, by prolonged application.

FETLOCK JOINT, SPRAIN OF: The fetlock of a horse is occasionally the seat of a sprain. If so, there is lameness, increased heat and swelling and this may persist for several days. When the joint is manipulated, it causes the animal pain.

TREATMENT: Rest, and the frequent application of cold water and cold water bandages after which apply Watkins Anodyne Liniment or Watkins Veterinary Lotion.

FLEXOR TENDONS: (Sprain Of.) The flexors are situated at the back of the legs and are very often sprained, and may lead to permanent thickening, (especially below the knee and hock) and contraction of the tendons causing the animal to go on its toes. A common name of this condition in the front legs is knee-sprung. Old standing sprains lead to a shortening of the tendon and are almost incurable. In the more recent cases, where there is heat and swelling, use a sedative lotion like Watkins Anodyne Liniment and the application of cold water and cold water bandages. If the lameness hangs on, apply Watkins Veterinary Blister as directed under Bone Spavin for there is no better application for chronic inflammation of the tendons.

FOOT PUNCTURES: (Wounds.) The horse commonly suffers from this injury which may be due to a picked up nail or to one that has been falsely driven by the shoeing-smith. Lock-jaw follows injury to the feet, therefore it is important that all wounds of the feet be promptly and carefully treated before more serious complications arise.

TREATMENT: The shoe should be removed, the seat of the injury well pared out or made of sufficient size for the introduction of a bit of cotton or oakum, rolled as a string, so it can be introduced into the wound by means of a probe of some kind. It is very important that probe and material used for packing the wound are thoroughly antiseptic, 1 part of the Germicide to 25 parts of water for the first application and 1 to 75 for the rest of the treatments. After the cotton has been inserted a few times, and withdrawn, each time a fresh cord being used and fully saturated, leave the last one in and pack a thick layer of saturated cotton over the entire sole of the foot, keep the pack in place with heavy sacking brought up around the fetlock and secure with a bandage. Cleanse and dress in this manner daily until the wound has healed. Keeping the pack saturated with a solution of the Germicide, 1 part to 75 of water several times daily is very beneficial also the application of Watkins Veterinary Lotion daily when the wound is not healing properly.

FOUNDER OF THE FEET: (For description and Treatment see page 78.)

FRACTURES: Fractures of the spinal column, either prove fatal at the time, or subsequently, and the leading symptom is loss of functional power behind the seat of injury. Fracture of the limbs, in domestic animals generally

necessitates immediate destruction, more especially if below the knee or hock, there being no flesh for support. In horses when the pastern is split, and the animal a particularly valuable one, a three month's rest in slings, and the application of plaster bandages may be tried. The prominent signs of fracture are: crepitation, extreme mobility of the part, displacement, swelling, pain and lameness. The average period for repair is six weeks but it may require a much longer time, possibly six months might be necessary.

HIP: (Injuries Of:) The hip is sometimes the seat of a bruise or a fracture, the joint being a ball and socket one, and if fracture is there, the animal must be destroyed. Fracture of the external angle of the haunch is not uncommon, and known as "Hipped or Hip-Shot." It is usually caused by the animal striking the point of the hip against the stable doors or other obstructions. The treatment should be left to a veterinarian.

JOINT, (Open.) When a joint has its capsular-ligament penetrated by a puncture, etc., it leads to the discharge of the synovia, or joint oil. A wound in close proximity to a joint may, through sloughing, produce open joint. Any joint may be in this condition, but more commonly seen in the joints from the knee and hock down to the feet. If infection occurs at the time of injury, supuration sets in and this complicates matters. If there is a disease of bone, blood is frequently intermingled with the joint oil. Open joint is denoted by swelling around the joint and the discharge of joint oil. Keep the parts thoroughly disinfected by using Watkins Germicide, Dip and Disinfectant. Professional treatment is necessary in all cases of open joints.

NAVICULAR DISEASE: This disease is very common among the lighter breeds of horses, another name applied sometimes to this disease is "Coffin-joint," which affects the cartilage of the navicular bone, the navicular bone itself, the bursa (or lubricating sheath) and the flexor tendon where it passes over the bone to be attached further down in the foot. Usually the first symptom observed is that the horse when quiet in his stall will place one foot forward about 8 or 10 inches with the heel slightly raised; or, if both feet are affected, he will advance first one then the other. In traveling there may be as yet no lameness apparent, but the horse does not reach out as he should and is liable to stumble frequently. Gradually lameness develops, at first disappearing with exercise and only returning after the animal has been standing for several hours. Later on the lameness is more aggravated, the heel may contract. Upon examination, heat in the back part of the foot is usually detected and the animal flinches from pressure in the hollow of the heel, or when the wall in the region of the quarter, or the sole at each side of the frog is tapped lightly with a hammer.

TREATMENT: Except in some of the recent cases, it is usually unsatisfactory. Remove the shoe. If the inflammation is quite marked, stand the horse in wet clay or poultice the foot until it is reduced. If there is little or no heat, or after you have reduced it as directed, apply Watkins Veterinary Blister by carrying out the full directions as given under Bone Spavin. Some cases apparently recover but we cannot promise definite results. Even though the lameness is entirely relieved, a return of the trouble is always probable.

QUARTER AND SAND CRACKS: Quarter and Sand Cracks are conditions where there is a splitting of the wall of the hoof, beginning at the coronet, and commonly situated at the inner quarter of a fore foot and at the toe in the hind ones. It is due to an imperfect secretion of the horny fibres and not an uncommon cause of lameness. The lameness is due to the sensitive structures on the face of the pedal bone getting nipped between the edges of the crack. When the crack is first seen, the foot should be poulticed with linseed oil meal for a few days. This will remove the inflammation and soften the foot. The next step will be to pare out a piece of the hoof V shaped at the top, separating it completely from the coronary band a half inch or so on each side of the crack down to the quick. Fill this hole with Watkins Veterinary Ointment daily and also put it all around the coronary band. In obstinate cases it may be necessary to apply Watkins Veterinary Blister for 24 hours to stimulate a healthy growth of hoof.

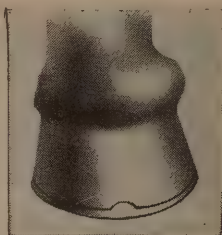


Ring-Bone

RING-BONES: Ring-bone is a very common affection of the pastern joint of a horse, either in the fore or the hind-legs. It is spoken of as "High" or "Low" in accordance with its position. It is due to the deposit of new bone, situated just above the coronet, and often assumes the form of a ring, hence the name. It may be situated on the front or hind face of the leg and the new bony deposit represents Nature's method of strengthening the part but ring bone lameness frequently exists during the formative period and may persist after the acute inflammatory signs have subsided. To enter fully into the treatment of ring-bone would be to repeat much that we have said concerning the treatment of Bone Spavin. If there is merely an enlargement and no lameness, let it alone. There are some cases that never cause trouble.

Where a case is developing and is accompanied by lameness, follow the line of treatment as recommended under acute spavin lameness. In cases that are well established and causing acute marked lameness it should be treated with Watkins Veterinary Blister, by following out the full directions as given under Bone Spavin. This remedy seldom fails even in very old cases that have been fired or unsuccessfully treated in various other ways. Our treatment in the manner directed is often sufficient to cure, even though the blemish extends well around the foot. Remember to keep the animal quiet until the part is completely healed from the effects of the blister. Watkins Veterinary Blister is just as sure upon ring bones as it is upon bone spavins.

SIDE BONE: Side bones are practically the same formation as ring bones, though some authorities make a slight distinction. All agree, however, that the same treatment is required. In appearance it differs from ring bone in that the enlargements are upon the sides of the foot and do not meet in front, and sometimes only one side is enlarged. Where the animal is not lame no treatment is advised. If well developed and the lameness is quite marked, use Watkins Veterinary Blister as directed under bone spavin, the animal can be put to work however; after the effects of the blisters have healed up, which should be accompanied inside of two weeks.



Side-Bone



Splint

SPLINT: This is a bony deposit on the inside of the fore leg in most instances, just below the knee varying in different cases. If the enlargement is not high up against the knee, and is well forward and out of the way of the tendons, it is not apt to give much trouble. Sometimes the animal will show no lameness on soft ground, but become very lame upon hard roads, and carry the head in a drooping fashion. Old cases that are causing no lameness should be let alone, as the deposit is apt to be too thoroughly hardened to be absorbed away. If there is lameness, or if you want to remove a recent growth, note whether there is any inflammation present. If there is, use Watkins Anodyne Liniment or Veterinary Lotion until the inflammation disappears, which will probably be in a few days, then apply Watkins Veterinary Blister for 24 hours after which grease the affected part

daily with Watkins Petro-Carbo Salve, until all the scab is removed.

SWEENEY: Wasting of the muscles covering the shoulder blade of the horse is commonly called "sweeney" and the cause may be due to any strain, sprain, or bruise of the parts due to a bad fitting collar or to awkward steps of a colt plowing for the first time and especially when worked in the furrow. The large nerves of the shoulder are affected and in consequence nutrition is impaired and the muscles waste away. A similar condition may affect the muscles of the hip, or the space between the stifle and hip.

Lameness is very seldom a prominent feature in shoulder sweeney. Very often this shrinking of the muscles is the first symptom observed, and in some cases the shoulder blade becomes so denuded, that there appears to be no flesh

at all between the skin and the bone.

In this connection it should be remembered that wasting of the shoulder muscles also may be due to any chronic lameness or soreness of the foot, or leg, between foot and shoulder. It is important to make sure whether the cause is in the foot or in the shoulder before commencing treatment.

TREATMENT: Any agent that will stimulate the flow of blood to the poorly nourished parts. If this is properly done the muscles will gradually grow in again and regain their normal development and power. An old fashioned plan is to make incisions in the skin and then blow up the parts with air to separate the skin from the bone. This kind of treatment should not be used. Sentons (rowels) of tape may be inserted under the skin, but they leave scars. Better treatment consists in rubbing the parts daily with a stimulating liniment, or blistering at intervals of four weeks. In Watkins Veterinary Anodyne Liniment, for cases that are not of long standing as directed upon every package, Watkins Veterinary Lotion for a more stimulating liniment in the more obstinate cases, you have two of the best preparations now on the market. Sweeney makes a horse unsalable and unfit for work at times but you can overcome this condition by the use of these ideal remedies.

In extreme cases of sweeney blistering may be resorted to as described under Bone Spavin. In the general application of Watkins Veterinary Blister, we are unable to give you specific instructions as to how long the affected part should be rubbed, or how long you should let the blister act, before applying some agent like vaseline to stop farther action. If you are applying it for gentle action, and slight blistering takes place, no harm is done further than it requires a little more time for recovery from the blistering.

We have covered lameness from bone spavin to sweeney by advising that a generous coating and rubbing be applied to a bone spavin and allowed to work for 36 to 48 hours, depending upon the condition of the hock and that the animal be given complete rest from work for at least a month or six weeks. We would treat an old case of sweeney by clipping the hair and applying a light coat of the blister over the affected part and rub lightly for a couple of minutes then restrain the animal so he cannot lay down or reach the blistered surface with the nose and lips and apply a generous coat of Watkins Petro-Carbo Salve in from 15 to 24 hours, depending upon the amount of irritation desired.

The object in clipping the hair short, is for two reasons, first the subsequent washing and caring for the blistered surface is more easily accomplished and second, it can be applied more readily and evenly to a clipped surface and less ointment is required.

LEG WEAKNESS: (Poultry.) This is a common ailment, especially in young birds, and many think cockerels suffer more than pullets. It is allied to but quite distinct from cramp. The limbs appear incapable of affording the body proper support, giving way under its own weight. The joints are weak and the condition corresponds to rickets in other animals though the growth of the body does not remain stunted, as in rickets. It apparently arises through the rapid growth of the body and defective limb support. Give the best food and more especially such substances as are rich in phosphates. In Watkins Poultry Tonic you will find phosphates and other tissue building properties necessary to meet these conditions in growing poultry.

LEG SCALE: (Scaly Leg, Poultry.) It is caused by a small insect which burrows into and under the scaly covering of the feet and legs of the fowl. It is contagious and fowls that have been attacked with this disease should be looked after. Wash the toes and legs with soap and water and then cover with Watkins Petro-Carbo Salve.

LICE: (Horses, Cattle, Sheep, and Swine.) For description and treatment see Section 5 on Dipping and Watkins Germicide, Dip and Disinfectant.

LICE: (Poultry.) Are responsible for more poultry being out of condition than any other cause or perhaps of all other causes put together.

If you hens are not doing well the first thing to do is to make sure that they and their quarters are free from lice. Having done this then you may look to see if they are suffering from any illness. A chicken may pick up lice running around the barnyard or in hundreds of other different ways, and the successful poultryman must always be on his guard against them.

Little chicks are frequently attacked by head lice which fasten themselves on the heads and throats of young birds. Thousands of young chicks die from this cause and no other. If the young chicks have been hatched in the nests, they should be examined as soon as they begin to run about, as the head lice will leave the hen and attack the young chicks. If the chicks have been hatched in the incubator, they are not so likely to be attacked with head lice unless the machine is old and is not free from them. Head lice suck the chick's blood and rob it of its vitality. Body lice live among the feathers and cause irritation that prevents the flock being in the best condition. Watkins Louse Killer will be found a most excellent remedy and should always be found in every well kept poultry yard.

Under this same heading we may consider mites which are even a worse foe to poultry than lice. They attack at night after they have gone to roost in the poultry house, forsaking them in the morning and retreating to cracks and crevices in the sides of the hen house where they rest until night time. Mites bite or burrow through the skin and suck the fowl's blood making rest impossible, and of course sapping the bird's vitality. In order to guard against these it is necessary to inspect the hen house and see that that it is kept clean. Watkins Germicide, Dip and Disinfectant is a certain exterminator of this pest, and will enable you to keep the quarters in a clean sanitary condition. In addition to using the Germicide, you should provide the fowls with a dust bath letting it be clean fresh earth. Into this add a liberal quantity of Watkins Louse Killer. Chickens are very fond of the dust bath and it is nature's way to enable them to keep themselves free from vermin.

We recommend the use of Watkins Louse Killer freely where there are laying and setting hens.

LIVER-ROT (Or Fluke.) Liver-rot is common in sheep, especially those grazing in marshy localities, and when the disease appears it commonly assumes enzootic character, by first one sheep and then another becoming affected. Lambs are predisposed to suffer. Some pastures are famed for the production of it, and a single sheep may harbor hundreds of flukes, and a single fluke may produce thousands of eggs.

Fluke cysts are to be found in ponds, ditches, etc., and when they gain access the cyst wall is dissolved in the sheep's stomach, and the fluke makes its way into the bile duct and gall bladder producing the well known symptoms of liver-rot, which are: gradual loss of flesh, clapping of the wool, the wool falling out, the back becomes hollow, eyes yellowish and in due course of time the belly becomes pendulous owing to dropsy. The presence of the liver flukes in the excreta is positive evidence of the disease. The mature liver fluke being about one inch long by one-half inch wide and of a creamy color.

TREATMENT: Change to upland pasture if possible, separate the infected sheep and give Watkins Stock Tonic as it contains the salts and sulphate of iron together with other ingredients, that come so highly recommended for the treatment of liver-rot. Give large doses three times daily until there is a favorable change noted.

LOCK-JAW: (Tetanus.) Lock-jaw is one of the most fatal maladies affecting the horse, and is solely due to the bacilli tetani, which are exceedingly minute organisms shaped like a drum stick, which gain entrance through wound infections, one of the most common conditions are nail punctures of the feet that do not receive prompt and proper attention. The leading symptoms are muscular spasms. As the disease develops and the animal is suddenly touched under the chin, the winking membranes shoot across the eye in a peculiar manner that is only seen in tetanus. The spasms increase in severity and the slightest noise will bring them on, rendering the animal convulsed from head to foot. Professional aid should always be obtained in conditions of this character.

LOSS OF CUD: A condition noticed in cattle and it is due to some disturbance of the digestive system. Feed the animal lightly for a few days and give Watkins Stock Tonic to tone up the digestive organs.

LYMPHANGITIS: (In horses.) It is also known as Monday morning disease and it comes on suddenly as a rule, after the animal has stood in the stable for a day or two following active work. It is denoted by the swelling, tenderness

and enormous dimensions that the limb assumes so that the animal is unable to bend it.

TREATMENT: Diminish the quantity of food, give a quart of linseed oil or a pound of Glauber's Salt. Bathe the leg with hot water and apply Watkins Anodyne Liniment or Watkins Veterinary Lotion. Give Watkins Stock Tonic to build up the system after the acute attack. Walking exercise is beneficial in this condition.

MAMMITIS (See Garget.)

MANGE (In All Domestic Animals.) See Cause and Treatment under section 5 on Dipping and Watkins Germicide, Dip and Disinfectant.

MALIGNANT OEDEMA: This is a disease common to cattle and sheep and other domestic animals and it closely resembles black leg, being sometimes taken for it. The cause of the disease frequently arises from injury to the skin.

SYMPTOMS: Bubbles appear in the tissue near the point of injury, these gradually extend to other parts. The disease usually develops within 24 to 48 hours. The disease also occurs at shearing time in sheep in consequence of cutting the skin; when it appears under such conditions the shearing pens may become permanently infected.

TREATMENT: Under such circumstances it is advisable to abandon such pens and build new pens in a new locality. The use of Watkins Germicide, Dip and Disinfectant will be found an excellent preventative of this disease, as well as useful in healing shear cuts. Use 1 part Germicide to 75 of water.

MILK FEVER: (Parturient Apoplexy.) Milk Fever or dropping after calving, is a disease entirely confined to cows and especially to heavy milkers. It is seldom that milk fever comes on before the second or third calf. It generally occurs within 48 hours from delivery.

SYMPTOMS: Denoted by a staggering gait, uneasiness, followed by a gradual loss of control over movements, there is difficulty in rising, more especially the uplifting of the hind quarters.

In the course of a few hours, the animal is unable to get up, though it may make repeated attempts. In due course of time the head is turned toward the breast, and loss of consciousness frequently follows. Unless the animal is properly treated, death inevitably supervenes.

TREATMENT: Put the cow in a deep bed of straw. Place bundles of straw so that she rests on her breast and not upon her side, taking particular care to have the head raised well up by packing with straw. What is known as the oxygen treatment described in Farmer's Bulletin Number 206, U. S. Department of Agriculture is the best method for treating this condition if the proper appliances are at hand, otherwise obtain professional aid at the earliest possible moment.

MOULTING: (Poultry.) This is nature's method of enabling the fowl to renew its growth by getting rid of all the feathers that become worn or broken. Poultrymen are not agreed in the best method of treatment of the fowls at this trying period. Moulting can be shortened by discontinuing feeding for a week or ten days as this causes the feathers to be dropped quickly, and then after the feathers have been dropped to begin heavy feeding especially with animal foods and those high in protein. A better plan we think is to lighten the food giving, however, a liberal supply of green food in which Watkins Poultry Tonic has been mixed. Green food should be put in the litter and the fowls made to work for it. Linseed meal and animal food such as beef scraps should be kept before the fowls after the feathers begin to come in. Special care must be exercised at this time to see that the poultry is free from lice.

NAVEL ILL: The navel is the seat of disease in the complaint, being the point of infection and, from this focus other troubles arise, such as, joint-ill, scour, etc.

The navel becomes swollen and reddened and in some cases, urine issues from the opening. It occurs in foals, calves and lambs. The disease spreads along the track of the cord, and death may occur within a few days, hence the necessity for due regard, at or about the time of birth, to cleanliness.

TREATMENT: It is better to prevent this disease than to treat it after it has appeared. This can be done by thoroughly disinfecting the stall in which the cow calves, and when the calf is born the navel cord should be tied with a

string dipped in Watkins Germicide, Dip and Disinfectant, 1 part of the Germicide to 75 parts of water and the same strength solution should be applied to the navel cord until it dries up, drops off and the wound heals.

PILES: (See Hemorrhoids.)

RED WATER AND BLACK WATER: This is a disorder affecting cattle and sheep, more especially the former. The symptoms are: A reddish-tinted urine, which gradually deepens, assuming the color of port wine, and owing to the black character of it, it is frequently spoken of as black-water and is usually caused by grazing in low marshes and being poorly fed.

TREATMENT: Change pasture, stable well, give one pound of Glauber's Salt and nutritious food and Watkins Stock Tonic.

ROUP: (Poultry.) It is the result of colds and it may occur at any season of the year though most commonly met with during the fall and winter months and early spring. The disease is infectious and the germs may be carried by the wind. When the attack first appears it may be noticed by sneezing and gasping of the chick which frequently rubs its head on its plumage. The bird suffers from a loss of appetite and mopes in some dark corner. There is a watery discharge from the corner of the eyes and mouth which fills the throat. The comb turns black and there is high fever. Remove the sick birds to clean dry quarters and the quarters of those birds not affected should be thoroughly disinfected daily with Watkins Germicide, Dip and Disinfectant. One part of the Germicide to 75 of hot water. In this as all other diseases prevention is better than cure, and if our directions as to sanitary quarters for your chicks and the proper feeding of Watkins Poultry Tonic have been followed you are not very likely to suffer from this dread disease, but if it should attack your flock, use Watkins Liniment, inserting a few drops in the throat in proper dilution.

Catarrh, Diphtheria, Pip, Canker, Consumption, Bronchitis, Congestion of the Lungs may all be considered under one head. They all start from colds the same as roup and the general course of treatment is about the same.

SCAB: (Affecting Horses, Cattle and Hogs.) See Cause and Treatment under Section on Dipping and Watkins Germicide, Dip and Disinfectant.

SCRATCHES: A name commonly given to inflammation of the heels and back part of the legs of the horse. The disease is more common in coarse, heavy limbed animals and may be caused by poor circulation, torpidity of the kidneys or some irritating substance such as filth, standing in slush, snow, etc.

SYMPTOMS: There is a swelling of the legs, with dry heat and tenderness. The legs appear stiff and sore and the skin frequently cracks forming fissures. Occasionally eruptions and fistulas form. In white horses, the skin looks red and inflamed.

TREATMENT: Remove the cause as far as possible, avoid filth of any kind, and prevent the legs from becoming wet. If there is a tendency to stocking of the legs, feed large doses of Watkins Sotck Tonic regularly, three table-spoonfuls at each meal, Wash the affected legs with hot water and soap then thoroughly dry and apply Watkins Veterinary Ointment. Some cases yield more readily to Watkins Veterinary Lotion.

SUNSTROKE AND HEAT PROSTRATION: All animals are liable to heat prostration. Attacks are most apt to happen on the third or fourth day of a spell of intensely hot weather characterized by mugginess, electrical storms and moisture-saturated air.

TREATMENT: High fever is present. Keep cold wet packs to the poll of the head or let a stream of cold water run over it. Shower the body with cold water from a sprinkling can.

SORE MOUTH: (See Aphth.)

THUMPS: A condition quite common in pigs due to digestive disorders, especially overloading the stomach and the lack of exercise are the main causes.

SYMPTOMS: The preventative treatment in young pigs is good care and plenty of opportunity to run about. To relieve the spasms, tincture of opium can be given in from 3 to 15 drop doses three times a day. A small dose of castor oil should be given in order to prevent constipation. The indigestion should be treated by regulating the diet and giving a course of treatment with Watkins Stock Tonic in small doses.

TICKS: (For treatment see Section 5 on Dipping and Watkins Germicide, Dip and Disinfectant.)

TRICHINOSIS: A disease caused by the trichina, a minute worm that affects people, hogs and rats. People become affected with the disease from raw or partly cooked pork. These worms are killed by thoroughly cooking or by long pickling and curing of meat products. Hogs become affected through eating offal and rats about slaughter houses. Hogs do not show, as a rule, any systemic disturbance when affected with trichinae, but people suffer very severely from eating infected pork.

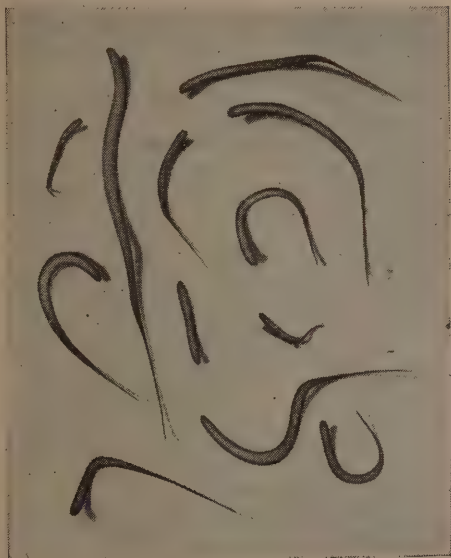
TUBERCULOSIS: Tuberculosis occurs among all domestic animals but is more commonly seen in cattle and hogs. It is the most formidable and widespread disease in these animals. It is a specific disease caused by the bacillus tuberculosis, discovered by Koch in 1882. Infection takes place by the inhalation of the bacilli or their spores, derived from the dried expectorate or other discharges of tuberculous animals; by ingestion of the bacilli carried in food, milk or water, or by inoculation of a wound of the skin or of a mucous or serous membrane. Its infective properties and communicability to other species render it a serious danger to mankind through the consumption of the milk or flesh of tuberculous animals. The organs chiefly involved are the lymphatic glands, lungs, liver and intestines and other serous membranes—the characteristic tubercles or “grapes” varying in size from a millet seed to immense masses weighing several pounds. These nodular growths are found principally in the chest and abdomen attached to the membranes lining these cavities.

PREVENTATIVE MEASURES: Tuberculosis being largely a house or stable disease due to artificial life, every possible precaution must be taken to prevent this disease. One tuberculous cow in a close, foul, hot or badly ventilated stable will eventually infect all other cattle in the barn. Even under the best surroundings, in the presence of other weakening diseases, tuberculosis may gain entrance and cause final destruction of a herd. In order to prevent and guard against such a disease it is necessary to maintain absolute cleanliness and proper disinfection of the premises. The only means of knowing that your herd is free from tuberculosis is by the tuberculin test in the hands of a competent veterinarian.

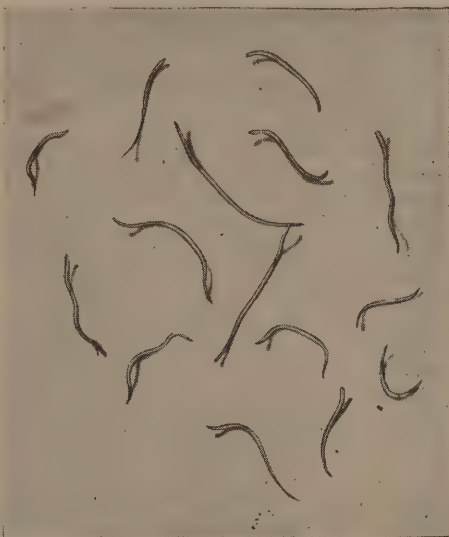
UDDER: (Inflammation of.) See Garget.

WARBLES: (See Bots.)

WORMS OR INTESTINAL PARASITES: All animals are troubled with intestinal parasites, or worms, and sometimes very severe losses are caused by their presence. Fluke worm, producing liver-rot, has already been alluded to. (See



Oxyuris curvula



Sclerostoma tetracanthum

Liver-rot.) Many of these parasites require an intermediate host to complete the cycle of their existence, and the larval form may reside in an animal of a totally different species from that in which the adult parasite resides; thus, for instance, there is a minute worm living in the bowels of the dog, whose larval form takes up its abode in various internal organs in man, horses, cattle, sheep and pigs.

Worms in domestic animals may be divided into three general classes; First: Round worms, (resembling earth worms) these are of all sizes from the small wire twisted stomach worm to a large lumbricoid in the intestinal tract. Second: Flat worms resembling a band or tape, known as tape worms. Third: Fluke worms that are shaped like a leaf. We do not feel that it would be of interest to you to go into further detail regarding the different sub-divisions and names of worms for it would be confusing to the average person, but we will go into the life cycle in a general way of certain parasites in order that you may understand the difficulties encountered in ridding live stock of these pests, that are causing millions of dollars of loss annually to live stock growers.



Ascaris megalocephala

We have told you trichinosis in the pig is an infection denoted by minute cysts in the muscles, and produces in man a species of tape worm known as *Aenia Solium*. We have told you that sheep suffer from a disease known as Gid, due to the presence of a bladder worm locating itself upon the brain, and is derived from a tape worm infesting dogs—the ova of which are passed out in the ejecta—and believed to be taken up by the sheep during grazing.

Rabbits may also be affected by the larval form of tape worm, and when the dog consumes the intestines of these animals tape worm may result. All tape worms are composed of segments, and each segment is endowed with full reproductive powers, unless the head of the tape worm is expelled.

There are large round worms that are exceedingly common in the small intestines of horses and swine and if numerous they may block the canal and cause death.

Vermifuges are agents for expelling worms and vermicides for killing them. While one drug may be good

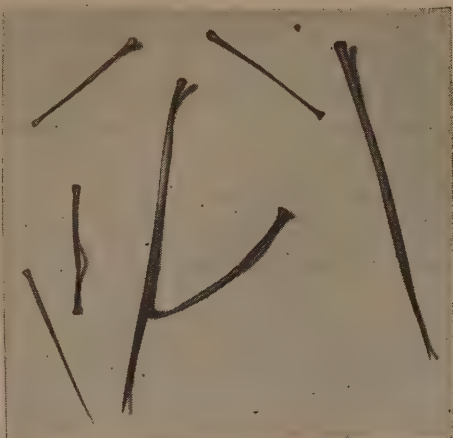
for expelling worms in domestic animals there is no one worm specific for all kinds, and this is why a drug may act in one case and apparently fail in another, consequently it is deemed better not to depend wholly upon one drug but rather a combination of drugs.

There are numerous symptoms noticed in connection with or following the invasion of worms in an animal, such as light colicky pains, switching of the tail, rubbing the tail against the stall and fences, generally poor condition, depraved appetite, licking the wall or biting the woodwork of the stalls or some parts of the body, eating earth and being particularly fond of salt; the bowels may be irregular, constipation or diarrhoea, etc. The one symptom, however, that may not deceive us, is seeing the animal pass the worms in the ejecta.

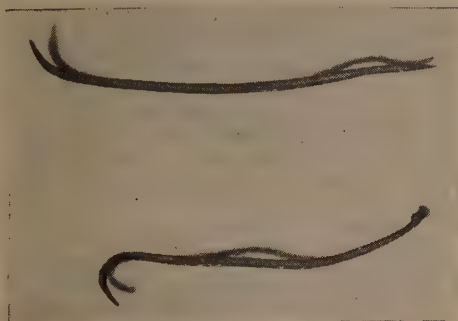
TREATMENT: In all animals the stomach should be as empty as possible before the administration of worm medicine by withholding food for at least twelve hours. On account of the numerous species of worms present in domestic animals, you can readily see that it would be hard to give any particular drug that would kill or expel all the different kinds.

For this reason we believe the generous feeding of Watkins Stock Tonic after a fast of from 12 to 20 hours, will give better results than any preparation we

know of from a stock tonic standpoint. Follow this treatment with continuous feeding of the Tonic in regular doses thus strengthening the intestinal walls and general health of the animal. This will not only expel the worms present but will prevent a re-infection, for we have told you that all worms have life by cycles and animals are the hosts for a part of the cycle. Breaking this cycle by this preventative measure is probably one of the best means of exterminating these troublesome parasites. We can not impress upon you to strongly the importance of continuous feeding of Watkins Stock Tonic, for every farm is infested with these parasites and they take their toll without discrimination. You will be money ahead by this investment, for no one can say how much the annual loss is to the live stock industry of this country, due to worms, judging from the number of inquiries we have daily for worm killers.



Sclerostoma armatum



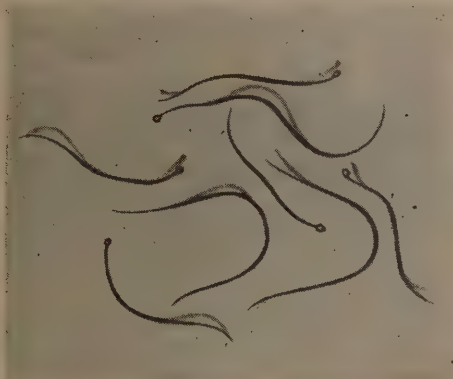
The Nodular Worm

For the immediate destruction of round worms, thorn headed worms, stomach worms, whip worms, ell-worms, etc., in domestic animals, we know of no better remedies than Watkins Germicide, Dip and Disinfectant and Watkins Stock Tonic. (For information regarding the destruction of worms with the Germicide, see Section 5.)

We want you to consult us freely through our Veterinary Service Department on any subject regarding diseases of animals, and especially on the subject of worms.

For it is a condition that is of the most vital interest to the live stock raiser and we are in a position to give you further assistance along this line.

WOUNDS: A wound may be superficial or deep, simple or compound. The situation of the wound and the degree of penetration have an important bearing on the ultimate issue. When the chest, belly, or the cranial cavity are opened,



The Stomach Worm



Spiroptera Microstoma

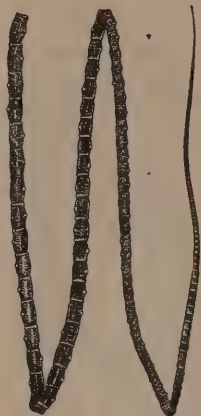
the danger is that some important organ may be implicated, and not uncommonly protrude and frequently necessitate the immediate destruction.

Wounds about the feet of horses are particularly common and require careful treatment which has already been described under lameness.

The direction of a wound influences its progress, for instance, a wound that passes from below in an upward direction heals quicker than one in the inverse direction, unless artificial drainage be made. Cattle frequently injure one another with their horns, and lacerations about the female organ are common and should be dressed with Watkins Veterinary Lotion. When a wound is in a state of putrefaction it should be cleansed with a strong solution of Watkins Germicide, Dip and Disinfectant, one part of the Germicide to 25 of water. If there is a cavity, rinse it out daily with one part Germicide to 75 of water and cover the wound with Watkins Antiseptic Healing Powder. In every case free drainage is necessary, otherwise the discharge soaks into the muscles causing softening and destruction of these.

Wounds heal by granulation, and what is termed "proud flesh" merely consists of excessive granulation, and should not be restrained nor burnt off, unless excessive. The use of Watkins Barb Wire Embrocation or Veterinary Lotion on granulating wounds is highly recommended.

Some wounds require sewing up, and the materials used for such purposes are catgut, silk, silver wire, boiled string, etc., while large blanket pins can be used for the same purpose, the pin being passed through the lip of the wound, and then horse-hair, silk or other material twisted around the ends in figure eight fashion.



Adult Gid Tape Worm.

Deep muscular wounds, in the horse requires special forms of suture, but in all external wounds the sutures are termed interrupted, that is each stitch is taken separately. The stitches must not be adjusted too tightly, or subsequent swelling may tear them out. The margin of the wound should be washed and dressed with agents like Watkins Barb Wire Embrocation, Veterinary Lotion and Antiseptic Healing Powder. This should be done at least once a day if there is an excessive discharge.

In the larger animals the loss of a few quarts of blood is not of much importance. Bleeding can generally be controlled by cold water applications, pressure bandages if possible, by tying the bleeding blood vessels, or the use of a suitable iron heated to a cherry red and applied.



The Fringed Tape-Worm. (Half size.)



Veterinary Service Blank.

Kind of Animal ----- Sex ----- Age ----- Size ----- Breed -----

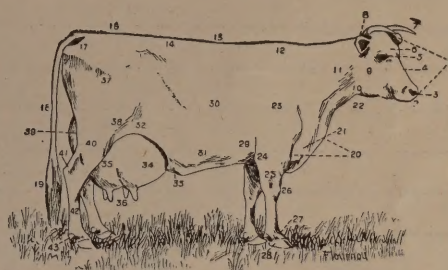
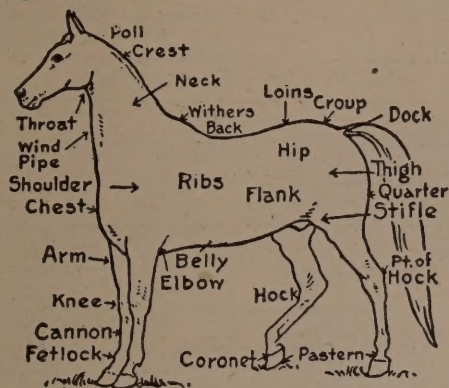
How long and how many animals are affected? -----

The cause and nature of the trouble in your opinion -----

Previous treatment, if any, also indicate by marking opposite each one on the reverse side what Watkins remedies you have on hand -----

SYMPTOMS IN DETAIL.

Give a short description of the breathing, nasal discharge if present, the odor of the breath, swelling of the glands about the throat, or other swelling about the body, character of the cough, appetite for food and drink, manner of taking food and drink, state if there are any nodules, ulcers or blisters on the mucous membrane of the nose or mouth, or elsewhere about the body, if there is anything abnormal about the abdomen. Note the conditions of the evacuations, the frequency, whether normal or not, the volume, consistency and form in constipation or diarrhoea. The condition of the urine. Body movements, etc. In lameness mark the exact location of the trouble (on the diagram for that purpose) as we cannot diagnose the seat of lameness with any degree of satisfaction by mail.



Name -----

Postoffice ----- State -----

In all inquiries mark the seat of the trouble as near as you can with an X on these diagrams of the different animals. Don't fail to mark the seat of all lameness, as we cannot give you a satisfactory answer otherwise.

List of Watkins Remedies on Hand

- | | |
|--|---|
| ----Watkins Stock Tonic | ----Watkins Vegetable Anodyne Liniment. |
| ----Watkins Petro-Carbo Salve | ----Watkins Veterinary Lotion |
| ----Watkins Veterinary Ointment | ----Watkins Poultry Tonic |
| ----Watkins Louse Killer | ----Watkins Barb-Wire Embrocation |
| ----Watkins Antiseptic Healing Powder. | ----Watkins Gall Ointment |
| ----Watkins Cream of Camphor | ----Watkins Germicide, Dip and Disinfectant |

 Mark an X in the space before all remedies you have on hand.

The following information and advice is absolutely free. It is furnished by our Veterinarian, a man of great ability in the treatment and care of stock. We give our customers the benefit of this expert advice without charge, but as so much depends on the treatment and care of the animal we cannot be held responsible in any way for results. We do not undertake to fill prescriptions or to furnish treatments or remedies for special cases.

ANSWER:

[illegible]

THE J. R. WATKINS MEDICAL COMPANY.

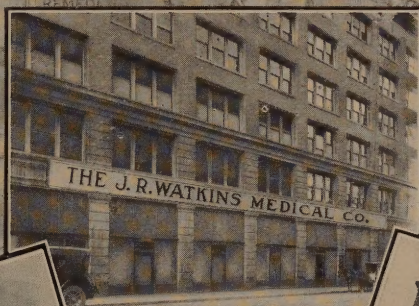
Per _____



Memphis Factory

We have a
Winnipeg
Branch and
Factory

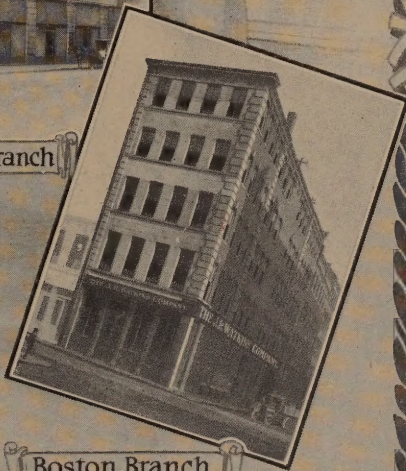
New Branch
opened at
Houston,
Texas



San Francisco Branch



Baltimore Branch



Boston Branch

PUBLISHED BY
THE J.R.WATKINS MEDICAL COMPANY
WINONA, MINNESOTA
BALTIMORE, BOSTON, MEMPHIS, SAN FRANCISCO, WINNIPEG

